TECHNOLOGY DEPARTMENT

Gas Journal

VOL. 279 106TH YEAR. LONDON, SEPTEMBER 1, 1954 NO. 4761. PRICE 1/3

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SEP 17 1954
DETROIT

Pure Flame

comes ever nearer

The nearest approach to sulphur-free gas on the large scale has so far been obtained from certain natural gas wells.

Photograph by permission of Messrs. HENRY WIGGIN & CO. LTD.

Where it is required to obtain the purest furnace atmospheres with coal gas, the catalytic sulphur removal plant is available.

The plant illustrated has a capacity of 30,000 cu. ft. per hour and is a successor to a first plant of 15,000 cu. ft. capacity, later enlarged to 25,000 cu. ft.

Average sulphur remaining in the treated gas is 3 to 4 grains per 100 cu. ft.

50 installations

FOUNDED 1850
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Kitchen-wise women choose

Vulcan

The glass door cooker with the *Extra* features!

Popular though it is, the non-misting glass door is but one reason why so many women decide on a VULCAN. They see the handy plinth drawer . . . self-locating grill pan . . . easy-to-clean finish inside as well as out. With its smooth-fitting, light-weight parts, the VULCAN is so easy to look after!

- *Fully-guaranteed Armourplate glass door.*
- *Retains full oven heat, can't steam over.*
- *Automatic regulator gives* double control.
- *Roomy plinth drawer.*
- *Self-locating grill pan.*
- *Fully-furnished oven.*
- *Good choice of finishes and oven capacities.*

Vulcan *DOUBLE-CONTROL* GAS COOKERS

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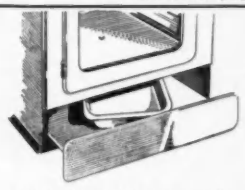
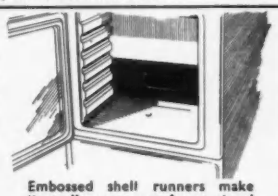
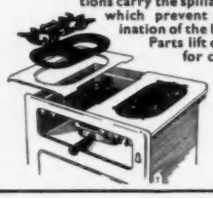


The Vulcan's plinth drawer is really useful for getting pans, shelves and utensils out of the way.



Embossed shelf runners make "gates" unnecessary. An occasional wipe with a damp cloth keeps this oven spotless.

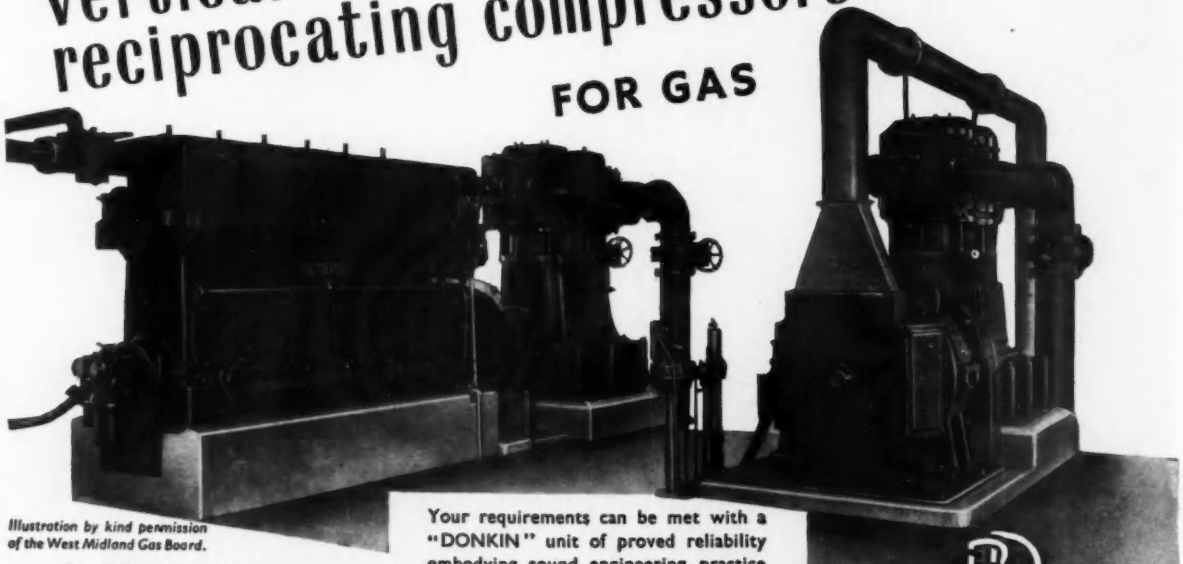


Vitreous enamelled hot-plate sections carry the spillage pans, which prevent contamination of the burners. Parts lift off easily for cleaning.

Point out these Vulcan advantages YOUR SALES WILL BENEFIT!

*

vertical reciprocating compressors FOR GAS



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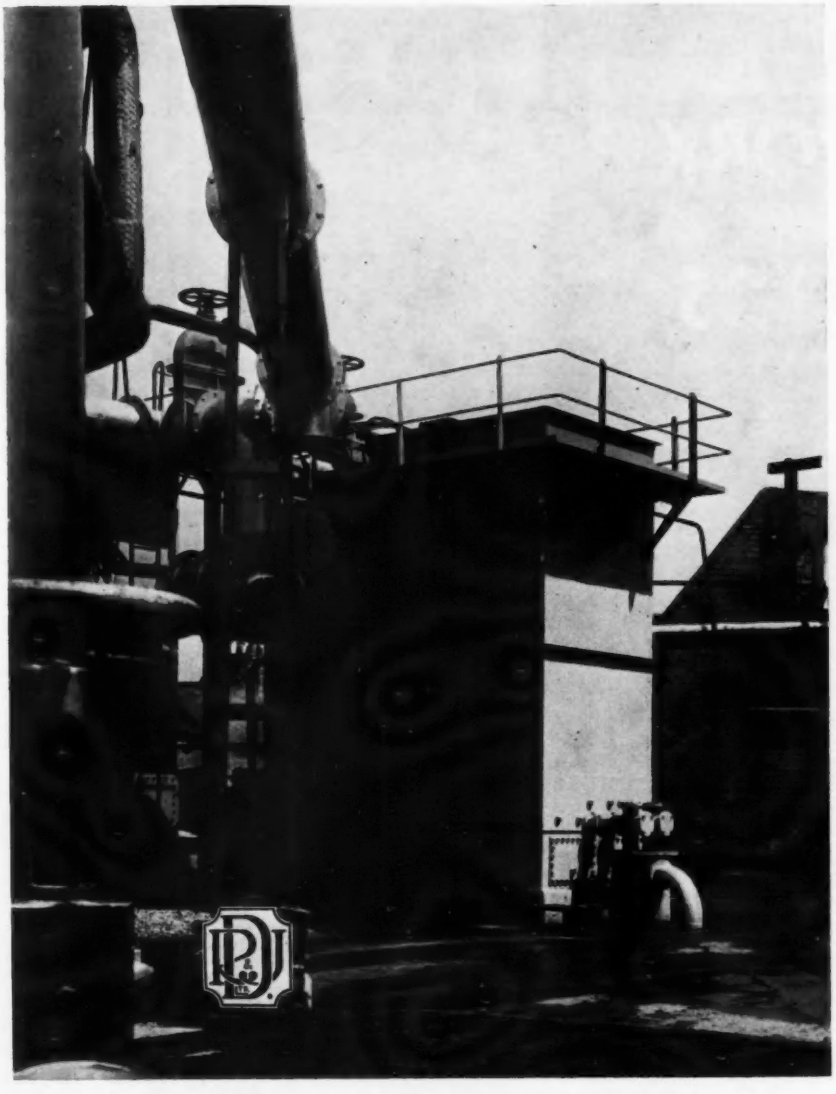

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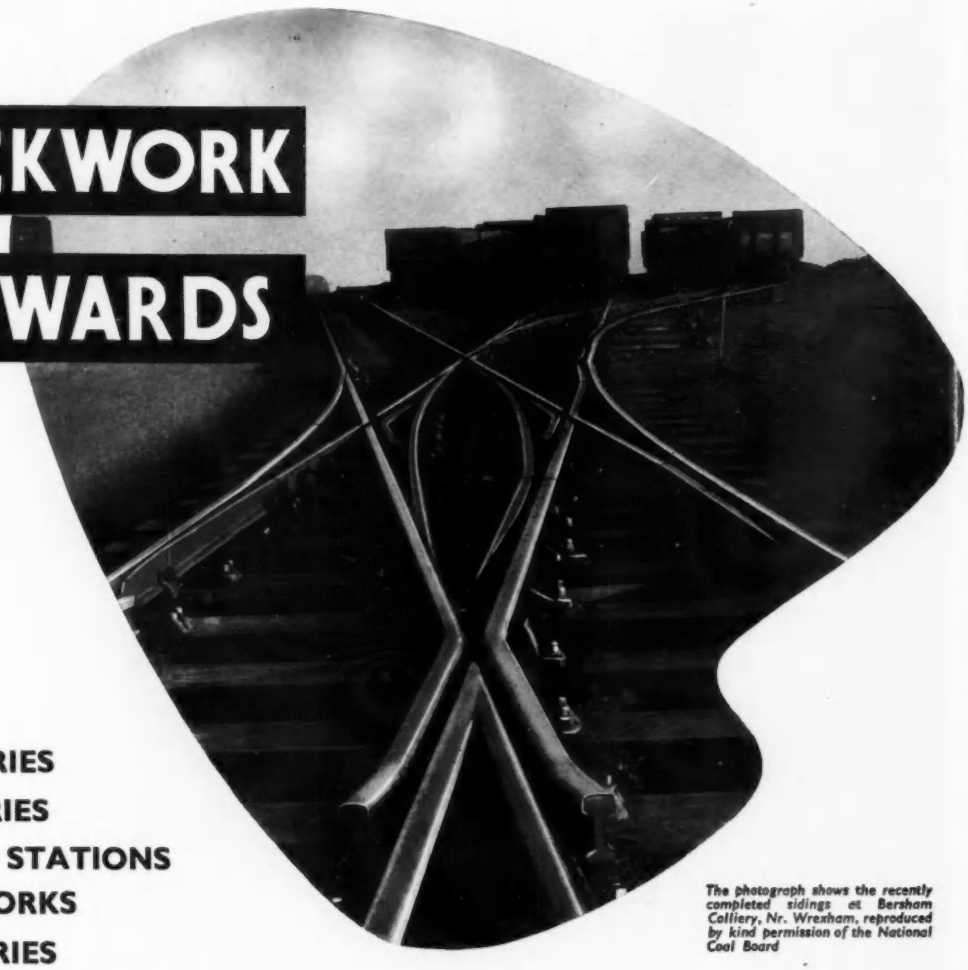

The photograph shows the recently completed sidings at Bersham Colliery, Nr. Wrexham, reproduced by kind permission of the National Coal Board

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SC/31

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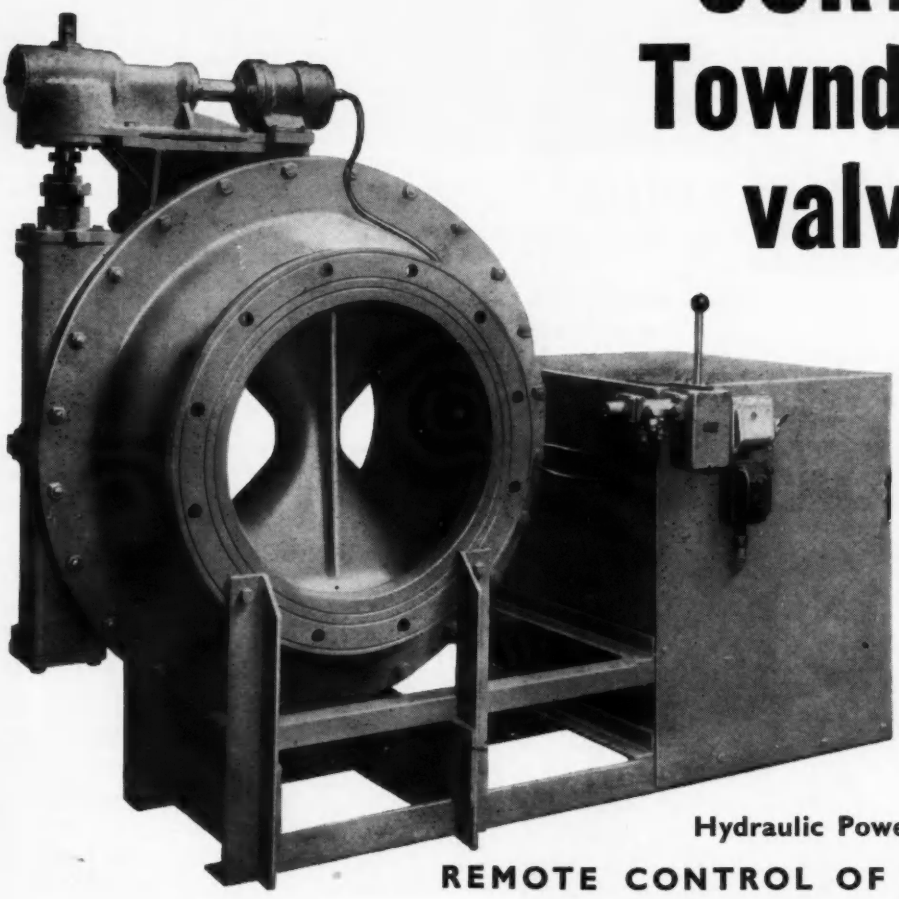

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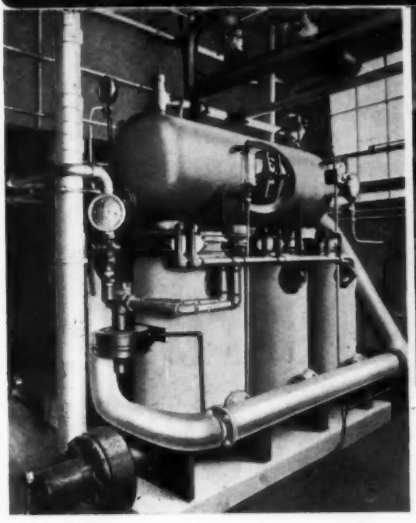

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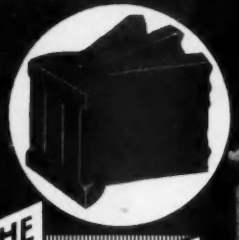

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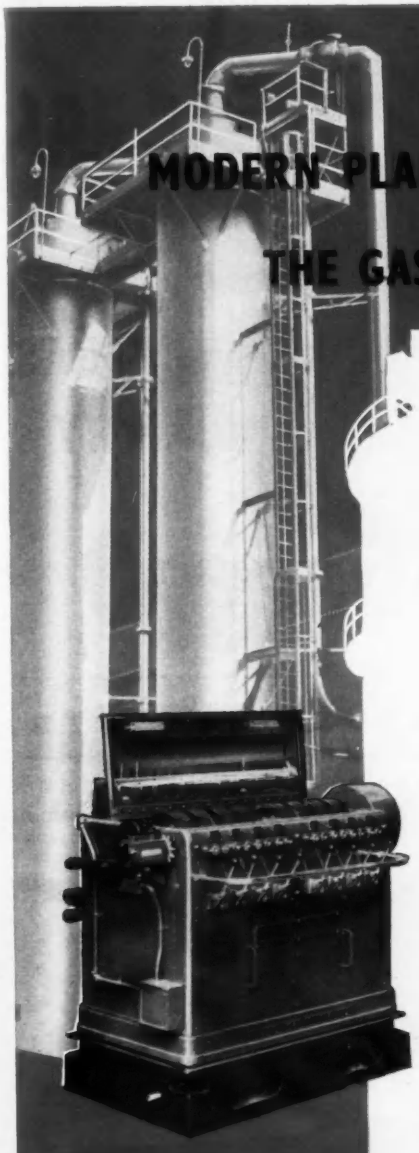

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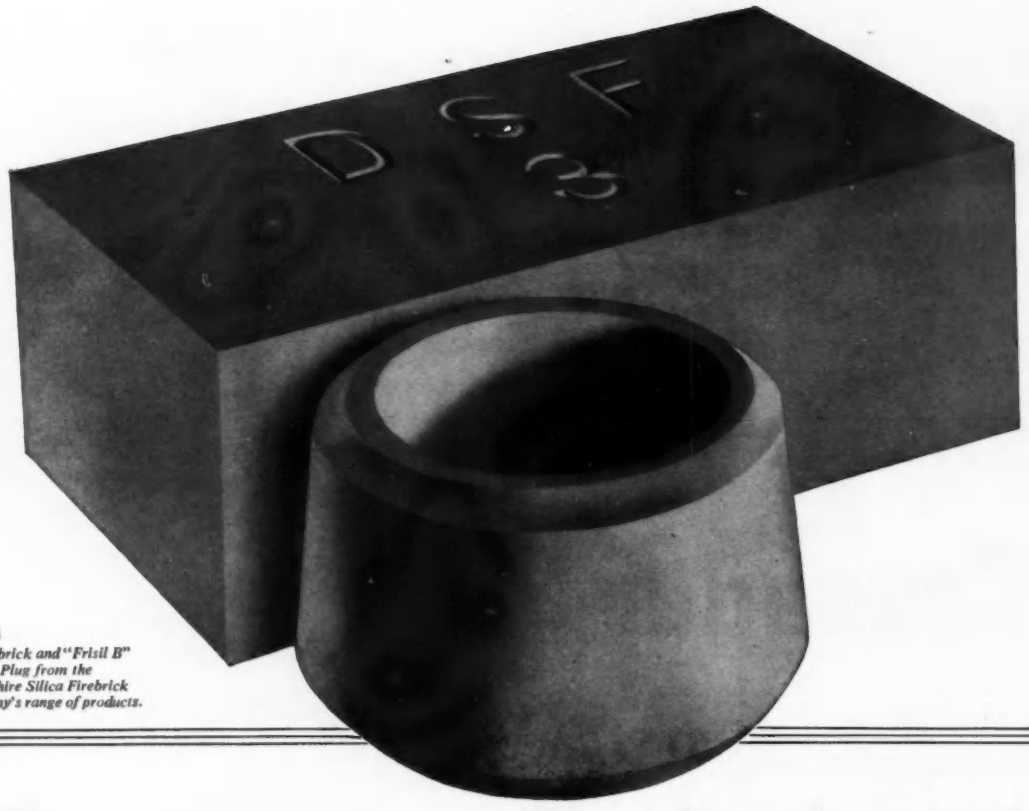

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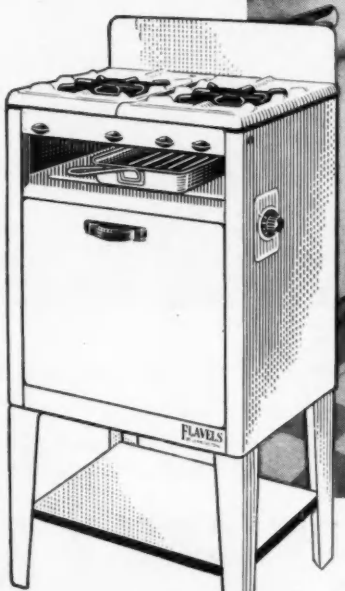

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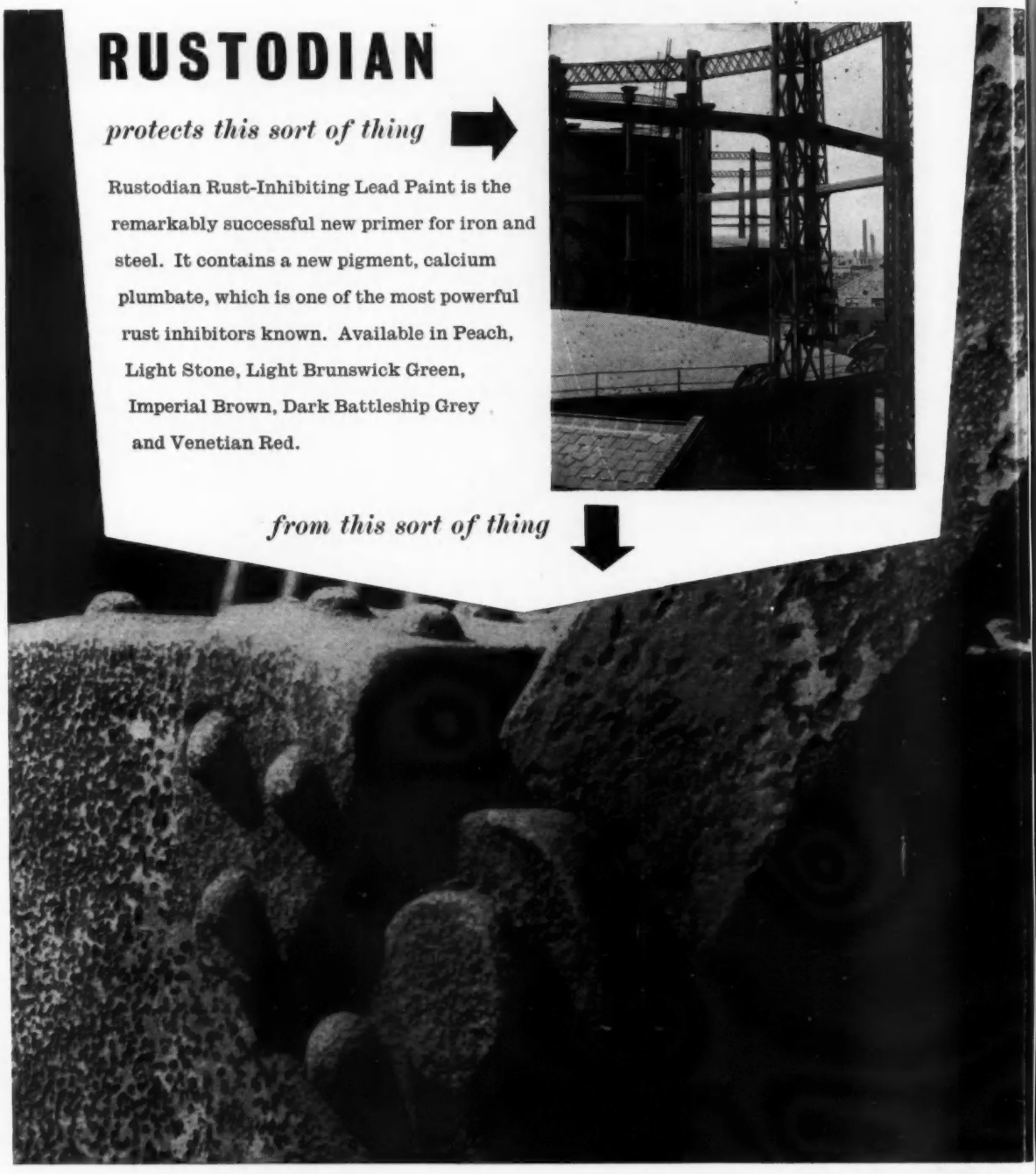

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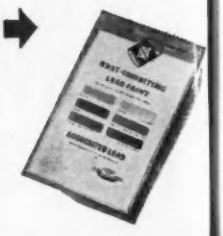

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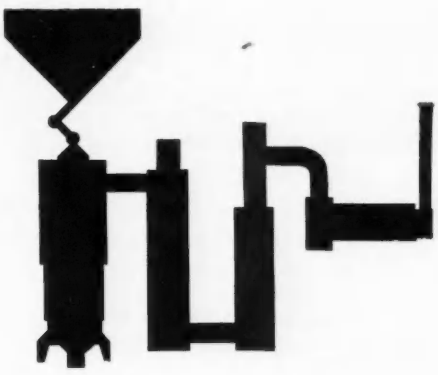

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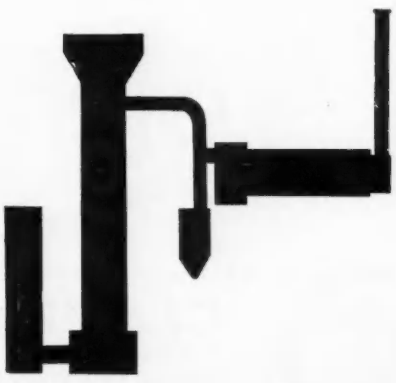

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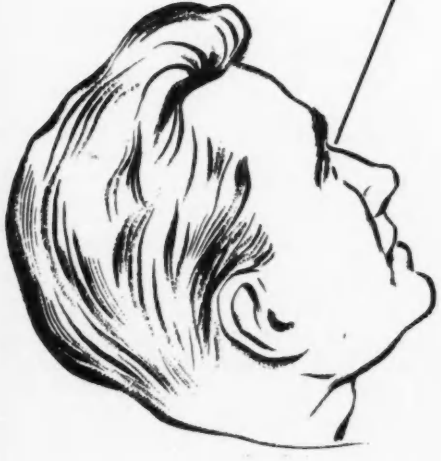

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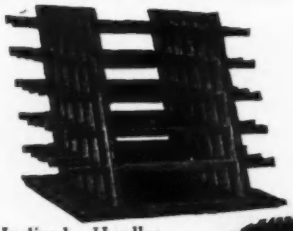

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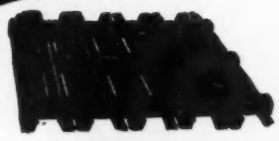

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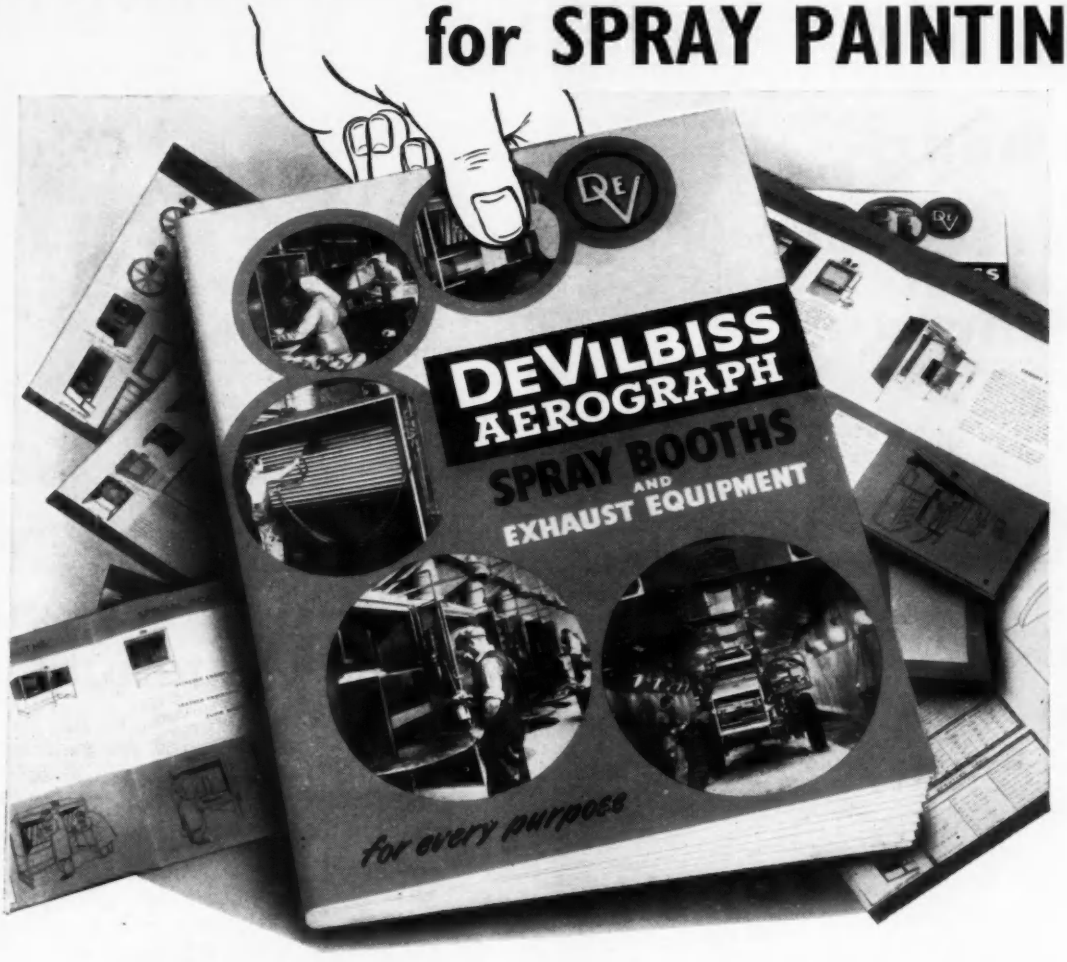

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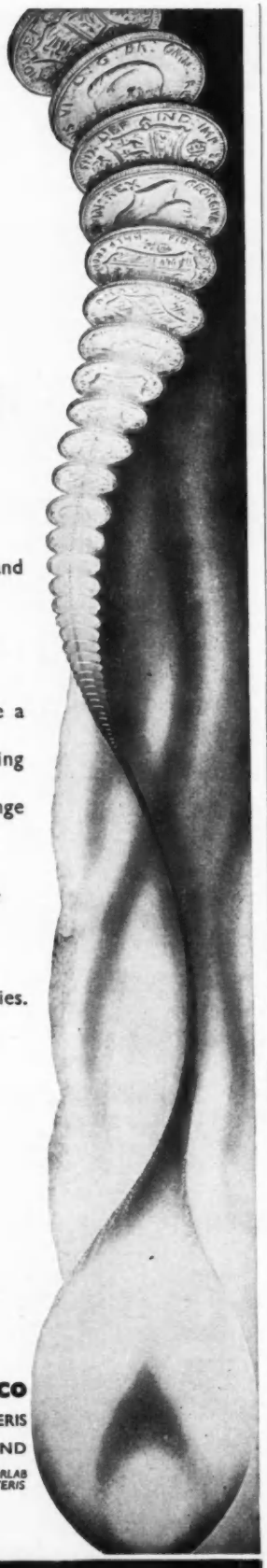

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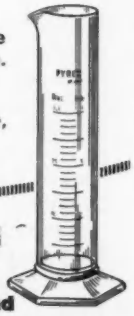

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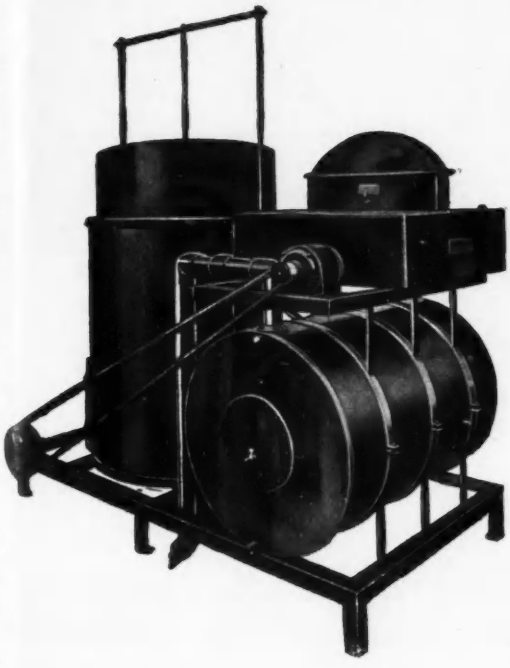

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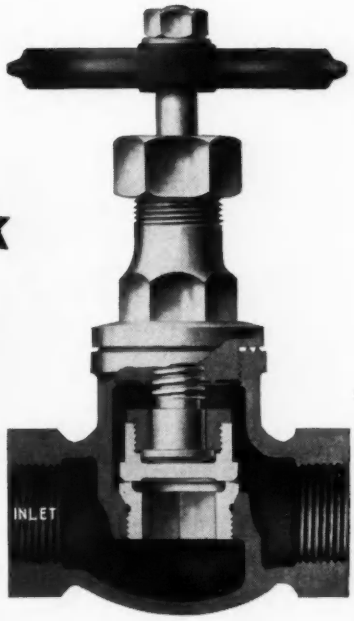

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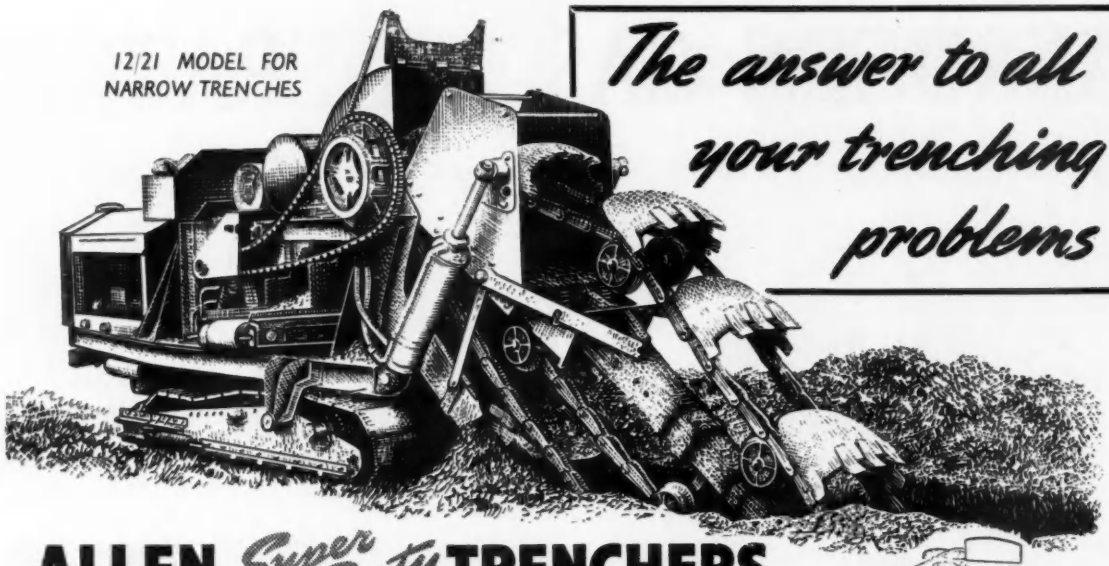

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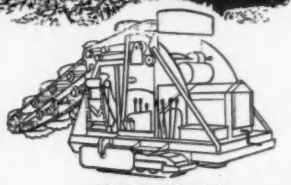

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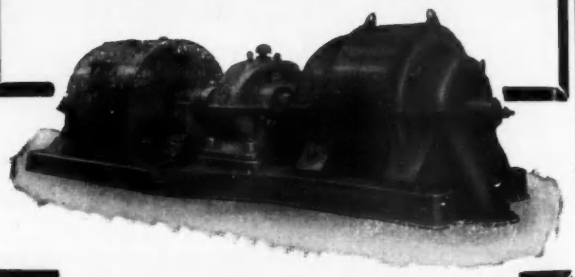

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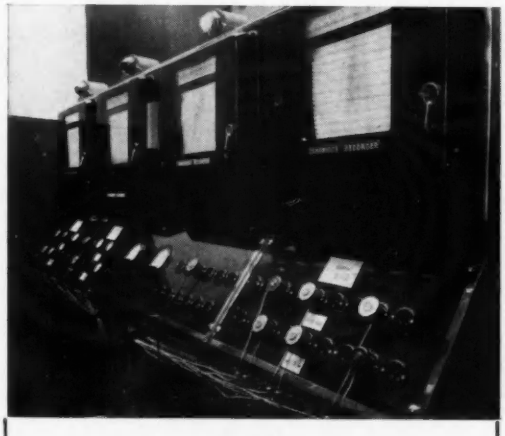

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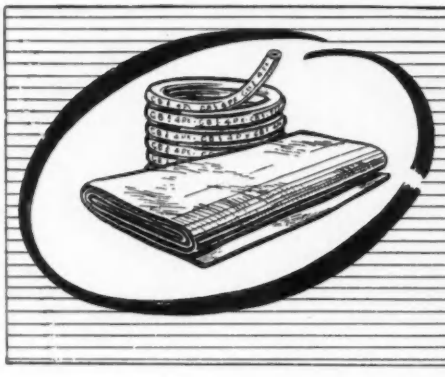

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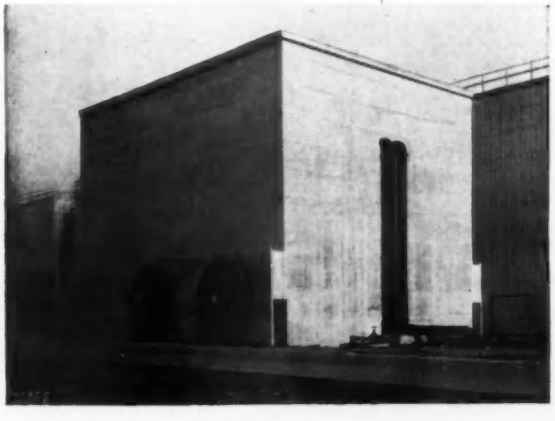

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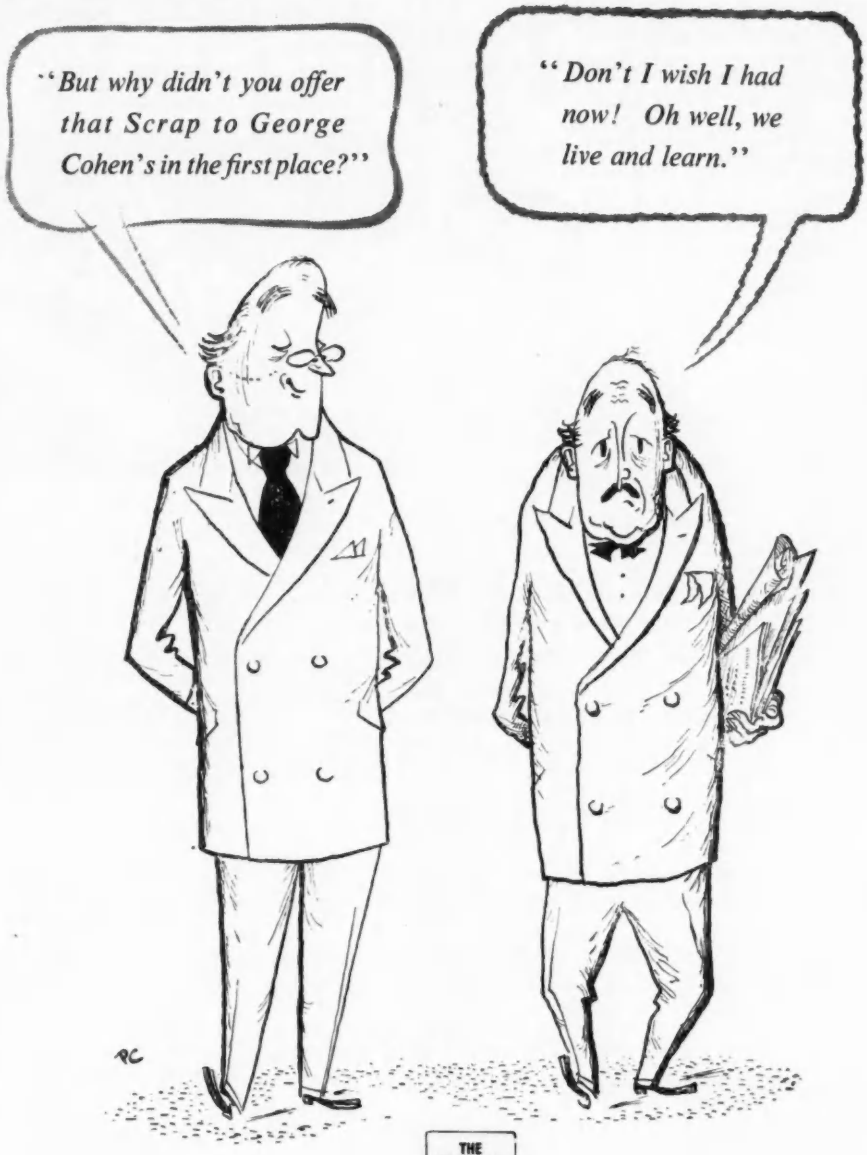

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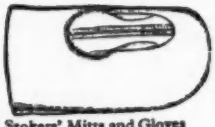
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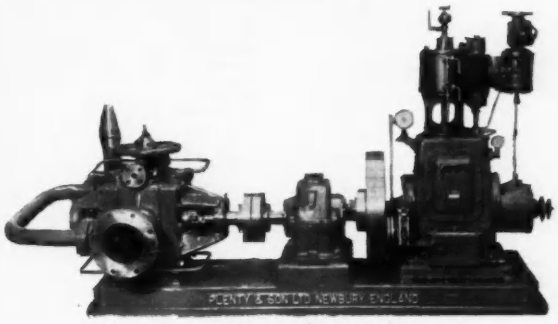

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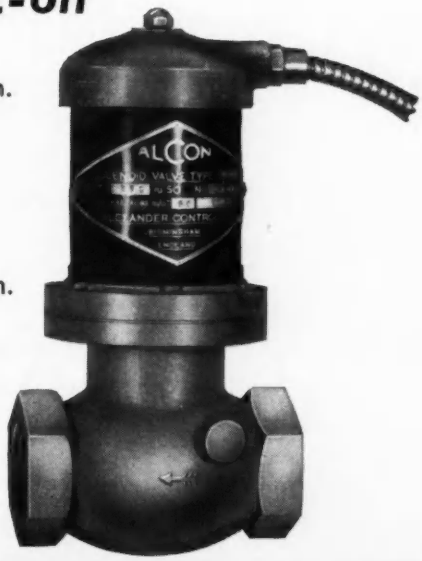

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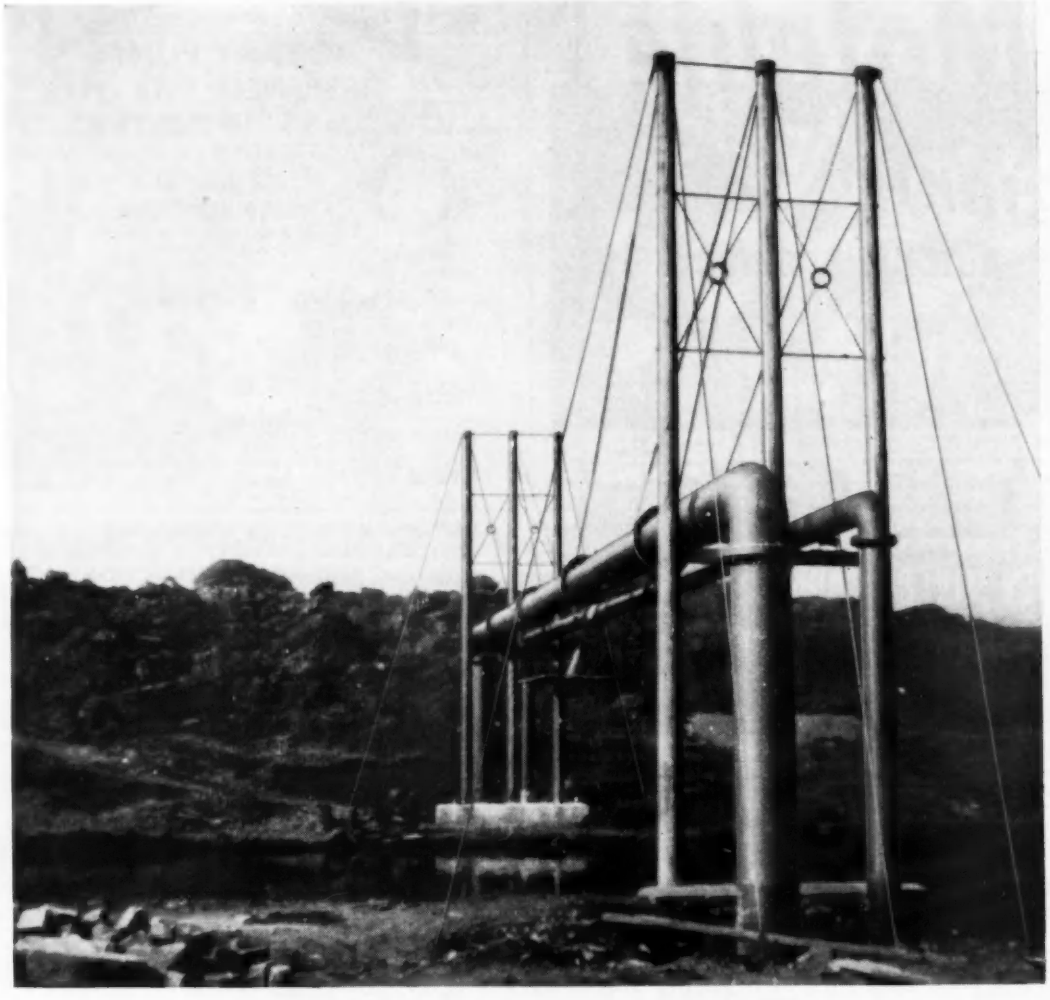

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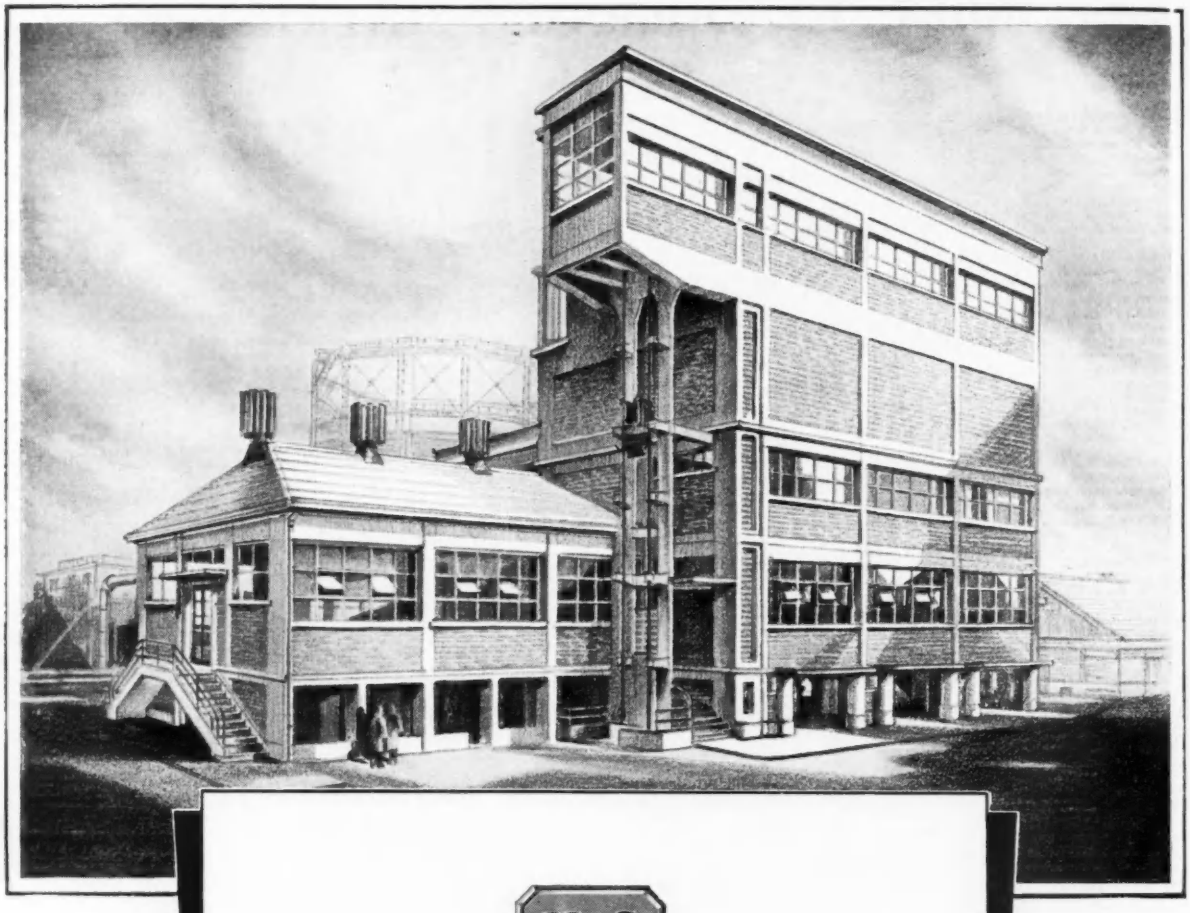

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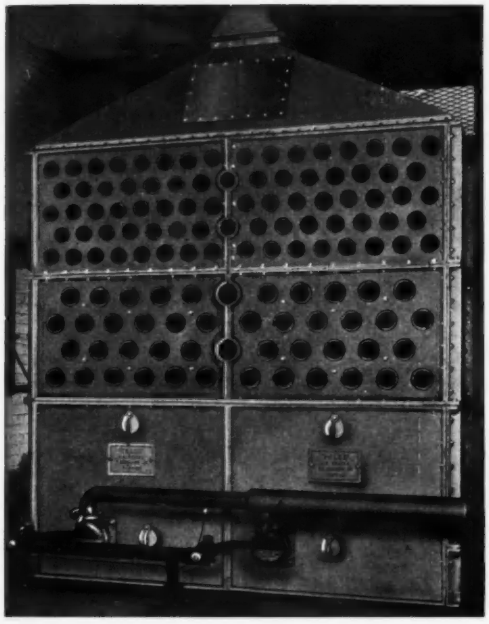

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106th YEAR OF PUBLICATION

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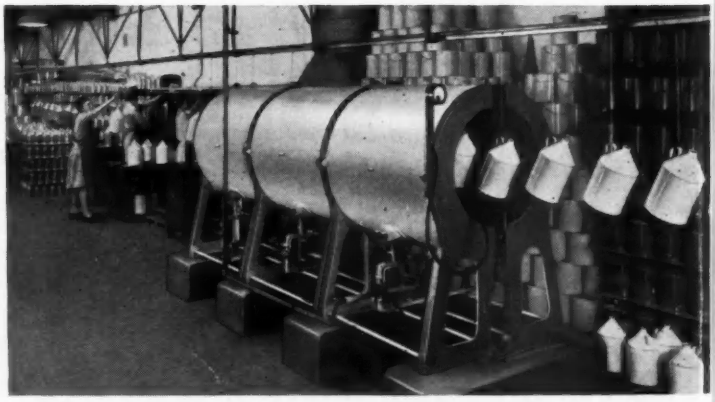

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Gas Journal

VOL. 279. No. 4761 106TH YEAR September 1, 1954

MENACE OF AIR POLLUTION

After generations of comparative neglect (though in recent years with a growing volume of informed opinion about it) the seriousness of air pollution has been realised, and the voluntary work of the National Smoke Abatement Society and other organisations has been backed up by the appointment of the Beaver Committee, whose interim report was published just a year after the beginning of the catastrophic smoke fog which resulted in the death of some 4,000 Greater Londoners. The Committee said in its interim report that the causes and remedies of pollution by smoke are known; the problem is one of practicability and economics, and of the education of the community. What action will be taken will depend on the recommendations by the Committee in its later report or reports. And whatever the recommendations may be, they will undoubtedly bring the question to the forefront of debate. They will either seem too drastic for those whose interests may be affected, or too half-hearted for those who believe that something drastic is necessary. While the Beaver Committee is still sitting, an independent investigation of the extent, effect, and prevention of air pollution has been carried out by P.E.P. (Political and Economic Planning), and a 28 page report has been issued—not attempting to anticipate the Committee's findings, but simply attempting to outline the subject in such a way that those findings may be more readily appreciated when they are published.

It would be unrewarding, says the report, to attempt to outline a programme for the solution or partial solution of the air pollution problem while the Beaver Committee is examining the matter and may be expected to publish recommendations for action in a few months. Nevertheless it goes on to give a number of pointers, and the information contained in the report goes to show the important part that the gas industry is playing in providing gas and smokeless solid fuel in increasing quantities. It strongly supports the development of smokeless zones, and comments that whatever the difficulties of establishing such zones may be in certain industrial areas it appears that the principle could be used widely for the prevention of domestic smoke. The domestic problem might be dealt with in new legislation under two heads: (1) Provisions to prevent continued manufacture of solid fuel burning appliances that cannot satisfactorily burn all solid smokeless fuels, and (2) because a nation-wide change to smokeless fuels is impossible for many years to come, domestic smoke prevention should be concentrated in areas where it will give most benefit.

One novel suggestion is a 'smoke tax', similar in effect to purchase tax, on the price of smoke-producing fuels, which might be a powerful means for preventing smoke and accelerating progress in the production and use of smokeless fuels as well as for administering the sharp stimulus to public opinion that is needed. The authors of the report also hope for improvement in coke quality. Coke has for too long been regarded as a secondary by-product of carbonization instead of as a refined form of coal equal in importance to gas. Coke quality is a matter on which it is hoped the Beaver Committee will make some forthright recommendations to the Government, the Gas Industry, and the National Coal Board.

The P.E.P. report says there is a need for an educational campaign to promote interest and understanding that (a) air pollution is harmful, expensive, and something to be ashamed of, and (b) that it can, with the co-operation of all, be steadily reduced. The National Smoke Abatement Society has led the way, but the time has come for a campaign on a large popular scale. Although there are many outstanding technical and administrative difficulties they could be overcome and are of less moment than the widespread lack of determination to tackle the problem effectively. The report ends: 'If the will is there, the way can be found.'

A report on 'Mortality and Morbidity during the London Fog of December, 1952', issued by the Ministry of Health since the publication of the P.E.P. report, serves to confirm that the irritants mainly responsible for the fatal illnesses during the fog were probably those derived from the combustion of coal and its products, but it adds little to the general campaign for reduction of air pollution; indeed it comments that 'to the great majority of normal healthy individuals the fog was little more than a nuisance'. Our main hope for improvement lies in the recommendations which are expected in the final report of the Beaver Committee.

C.G.I. DEPARTMENT OF TECHNOLOGY

A marked and rather unexpected increase from 77,951 in 1952 to 82,287 in 1953 in the total number of candidates examined at home and overseas is recorded in the report of the Department of Technology of the City and Guilds of London Institute for the nine months ended September 30, 1953—the Institute's year is being changed from the calendar to the 'educational' year, and all future annual reports will cover 12 months ending on September 30. Little has been said in recent reports about the medals and prizes awarded on examination results, which provide an incentive to students, and for their teachers a pleasing recognition of good work in the colleges. The awards come from various sources and are of various kinds. Last year they comprised four gold medals, 193 silver medals, 167 bronze medals, and 14 other trophies, while the total value of money prizes was £1,224. Among the organisations thanked for their support in this direction are the Society of British Gas Industries, the Coke Oven Managers' Association, and the British Iron and Steel Federation. Pressure on the Department's available accommodation referred to in last year's report has been eased temporarily by the transfer of one of the administrative branches to temporary premises in Coleman Street. The staff of the Department is now housed at three different addresses: Brechin Place, Gresham College, and Coleman Street, apart from temporary summer accommodation at Petersham and elsewhere.

Part 2 of the report describes new schemes and developments, and records that as an outcome of requests received from the West Midlands Regional Advisory Council, the Institution of Chemical Engineers, and the Association of Chemical and Allied Employers, The Institute set up an Exploratory Commitee to investigate the needs of the chemical industry for an operatives' course in chemical plant operation. The findings of the committee have been approved, and a course has been devised to meet the needs of operatives, as far as the Intermediate level; the Final grade will be completed in the ensuing session, and it is hoped that the course will be further developed to enable a candidate to qualify for a full Technological Certificate. Regulations and syllabuses for a course in mechanical engineering inspection have been published and the first examination will be offered this year. The report also notes that the new scheme of examinations in Gas Fitting has been approved by the National Joint Industrial Council for the Gas Industry, and the examinations will be accepted as qualifying under the National Classification Scheme for Gas Fitters. The Advisory Committee on Gas Fitting has been reconstituted to include a representative from each of the four regional examining unions. In respect of these examinations, the regional unions and the Institute have accepted the principle of a common syllabus, common examinations, and common examiners.

As in previous years the Department records its thanks to the many bodies and individuals without whose co-operation its work would be impossible. These include the Ministry of Education, the Colonial Office, the Scottish Education Department, the Ministry of Education for Northern Ireland, local education authorities, the British Council, the Royal Society of Arts, and the London Chamber of Commerce, and the many industrial organisations which have not only continued their active liaison with the Institute but in the special circumstances of a great and growing need have contributed in material and financial ways to the City and Guilds of London Institute.

BATTLE WITH COAL PRICES

In the nature of a preview of the Gas Board's annual reports we have had the addresses made to Consultative Councils by the Chairmen of several of the Boards; and it will have been gathered from the accounts of the speeches which we have published that they follow a general pattern. Chief obstacle to gas industry progress lies in the 'staggering' increase in the cost of coal—the industry's basic raw material—which can be offset only by price increases in the main products, gas and coke. Better service helps the sale of gas, and there can be no gainsaying that service to the consumer has been greatly improved. On the other hand, higher gas prices are not, of course, conducive to the wider use of gas and increased consumption per consumer. In the case of the Eastern Board, costs wholly outside its control have meant a matter of an extra £2 mill. since December, 1951; and it says a great deal for administrative organisation and technical advances that for 2½ years gas prices were 'pegged' in the area. Financial results of the past year's working inevitably show a deficit, and there was only one choice for the Board—to raise the price of gas. Even so, the new price structure is designed to encourage the additional use of gas in both the domestic and the industrial fields.

In the domestic sphere the higher efficiencies of modern appliances and the sociological changes resulting from new housing have been amoung the more dominating factors influencing gas consumption per consumer and total domestic sales. And, as we have mentioned, higher prices are bound to act as a brake on gas usage, more particularly, perhaps, in the home. It is, however, necessary to regard the whole problem of prices in right perspective; and what Mr. C. H. Chester, Chairman of the South Western Board, had to say about this was very much to the point and no doubt will have been studied carefully. Comparing prices in the South West against an index of 100 in 1938, it is found that the price of gas averaged 218 in 1952-53, coal delivered to gasworks 319, wage-rate of gasworkers 263, and wholesale prices 323. Hence Mr. Chester's comment that, as a result of increased technical efficiency and improved organisation, the Board's tariffs for gas are much more attractive today *relative to competing fuels* than were gas prices generally in 1939. This relative position should be stressed by the gas industry in its contacts with consumers.

In pointing to these aspects of development in the Eastern and the South Western areas we are really exemplifying what in greater or less degree—conditioned largely by the particular circumstances of the different areas—has been achieved by integration and bold planning made possible throughout the United Kingdom since vesting day. With the long-awaited relaxations in hire purchase and in other directions, the

(*Concluded on p. 524*)

William Murdoch Bicentenary

On August 21, the 200th anniversary of the birth of William Murdoch, a chaplet was placed on the Murdoch Memorial in the Parish Church of Handsworth, Birmingham, in the cemetery of which rest the remains of Murdoch. The chaplet bore a card reading—

> *"In Memory of William Murdoch, Born 21st August, 1754, pioneer of the Gas Industry, from the President and Members of The Institution of Gas Engineers."*

On the same day Sir Andrew Clow, K.C.S.I., C.I.E., Chairman of the Scottish Gas Board. visited the Wallace Monument, Stirling, to pay tribute to the memory of Murdoch, who was born at Bello Mill, Lugar, Ayrshire.

In the Wallace Monument Hall of Heroes, a memorial bust of Murdoch commemorates his inventive and scientific genius. It was presented by the North British Association of Gas Managers and unveiled in 1892 by Lord Kelvin, who said: 'Murdoch was a man who had done great things, not only for Scotland and England, but for the rest of the world.'

A floral wreath was laid at the bust of Murdoch by Sir Andrew Clow, who was accompanied by Provost H. A. Watters, Stirling (a member of the Scottish Gas Consultative Council); Mr. W. M. Gledhill, Alloa/Stirling Sub-Group Manager, Scottish Gas Board, representing the Institution of Gas Engineers and the Scottish Association of Gas Managers, and Mr. Alex. Walker, Immediate Past President of the Scottish Junior Gas Association, Western District.

A chaplet in the Parish Church of Handsworth, Birmingham.

Gas Industry representatives in the Wallace Monument Hall of Heroes. From left to right: Provost H. A. Watters; Sir Andrew Clow, K.C.S.I.; Mr. Alex. Walker; Mr. W. M. Gledhill.

horizon is clearer. Manifestly, however, concentration on sales was never more called-for. To return again to the particular, Mr. Chester's outline of the highly successful results of his Board's intensive campaigning and of dealer co-operation is altogether heartening. It is a long time since we encountered within the industry statements to the effect that in the water heating field the difficulty is to obtain the delivery of appliances to meet the demand. A refreshing breeze after deadening calm!

When we turn to the Midlands and from there look farther north we find a similar theme in the general content of the remarks of Gas Board Chairmen—the battle with soaring coal prices, the benefits accruing from integration and group and divisional working, the steps taken to raise the standard of consumer service. Increase in gas output in the West Midlands area—7% more in 1953-54 than in 1952-53—is greater than that shown by any other Board; and with it has arisen a 'serious position'. The substantial increase in gas demand has led to a depletion of coal stocks. Industry takes a large proportion of the Board's gas output, and the demand by industry is expected to be very heavy during the coming winter. The problem is how to satisfy requirement. We wonder whether the North Western Board has in the 'Rochdale' process an eventual answer—in part at least—to such a situation. We are naturally interested in the hope expressed by Mr. D. P. Welman that by its operation the proportion of 'poor' coal it will be able to treat will make a vital difference to the incidence of coal costs on gas prices. And as a further thought arising from the addresses of Gas Board Chairmen, does it not appear that the prospects for complete gasification have changed considerably and that projects for its wider application in the gas industry deserve greater attention and readier and fuller support?

Personal

MR. THOMAS STEWART, Manager of the gasworks at Kilwinning, Ayrshire, has been appointed Manager of Forres gasworks. He succeeds MR. JAMES STORRIER, in charge for the past 21 years.

MR. F. GREENWELL has resigned his post as Secretary of the British Coke Research Association after nine years service. Mr. E. T. S. Wraith, of the Durham Division of the National Coal Board, has been appointed in his stead and will take up his duties on September 14.

MR. A. WALSH, M.B.E., at present Secretary of the North Western Division of the National Coal Board, has been appointed Director-General of Labour Relations at headquarters in place of MR. IESTYN WILLIAMS, who retired last month. Mr. Walsh was appointed Secretary of the North Western Division in June, 1952, after having been Assistant Secretary of the West Midlands Division from 1947. He was for some years with Parkhouse Collieries, Ltd., Stoke-on-Trent. Before that he was in local government service.

The Board of Parkinson & Cowan, Ltd., announce that MR. W. LAWSON HURDMAN has resigned his Directorships and executive appointments with the Parkinson & Cowan Group. In consequence, DR. A. REES JONES, a Director of the Parkinson Stove Co., Ltd., has been appointed General Manager of that Company.

MR. JAMES WOODHOUSE, Assistant Divisional Marketing Officer (Coke) of the National Coal Board, has accepted the post of Commercial Manager of the Monckton Coke & Chemical Co., Ltd., near Barnsley, Yorkshire. For a number of years prior to the nationalisation of the coal mining industry, Mr. Woodhouse was the Sales Manager of the Nunnery Colliery Co., Ltd., Sheffield, and a director of the Rotherham Collieries Association, Ltd., and the Coke Producers Federation. Mr. Woodhouse possesses a wide experience in coke marketing, and will take up his new duties on September 1.

Obituary

Mr. F. W. WOODFIELD, Manager of the Manchester office of Babcock & Wilcox, Ltd., has died at the age of 60. Mr. Woodfield, who was well known in engineering circles, was a past Chairman and member of the technical advisory committee for the Fuel Efficiency Exhibition and an active member of the Engineers Club. He joined Babcock & Wilcox in 1929 and was appointed to the Manchester office in 1935. He was for many years a director of Erith's Engineering Co., Ltd.

MR. JOHN E. LEDINGHAM, of Winchmore Hill, who at the time of his retirement in 1945 was Deputy Engineer of the Tottenham and District Gas Company, has died. He was 76, and had been in poor health for some time. He leaves a widow and two sons. Mr. John Ledingham joined the late Tottenham Company in 1922 as Chief Draughtsman, and throughout his years of service was Assistant to Colonel (now Sir Harold) Smith; and he would have retired in 1943 but was retained to the end of the war. For seven years, to 1933, he had supervised the supply of electricity to Wood Green when the supply rights were leased to the Gas Company by Wood Green Council.

News comes from Stuttgart of the death, on August 26, of HERR KARL MULLER, Commercial Director of Junkers and Co. Of him, Mr. T. B. V. Hirst writes: 'He was a regular visitor to England in the 1930's. His friends here remember with esteem and affection the ever-ready courtesy and help of this man of outstanding character and personality. By his eagerness to understand and to meet the requirements of the gas industry, he played a great part in introducing Junkers' instantaneous gas water heaters and other products and ideas to Great Britain and throughout the world. Since the war, he had worked tirelessly to rebuild the business of his companies on sure foundations, almost to the time of his death.'

Davey, Paxman & Co., Ltd., of Colchester, announce that their London office is now at 1, Balfour Place, Mount Street, W.1 ('phone: GROsvenor 6114/5). London manager is Mr. A. C. Parker.

Calendar & Directory

ALTERATIONS

THE following changes have been notified during the past month. To keep the information in the current 1954 edition of the GAS JOURNAL CALENDAR AND DIRECTORY up to date readers are invited to note these alterations (together with the appropriate adjustments relating thereto in the 'Personnel' section of the DIRECTORY, pp. 138-150).

Page 21.—MINISTRY OF FUEL AND POWER. K. T. Spencer, *Chief Scientist*, vice Sir Harold Roxbee Cox.

Page 27.—DERBY: Add C. H. Underhill, *District M.*; Delete as *M.* from Burton-on-Trent.

Pages 57-68.—NORTH WESTERN GAS BOARD: Changes in Senior Group Officers: See 'JOURNAL' August 18, p. 405.

Page 91. SOUTH WESTERN GAS BOARD. Add W. J. Baker, M.I.MECH.E., A.M.I.CHEM.E., *Member*.

Page 95.—TORQUAY: Delete E. A. Haynes, *Commercial Officer*, appointed Chief Showrooms Manager, Birmingham. Hollacombe works telephone No. now Paignton 83283.

Page 114.—BEAUMARIS AND MENAI BRIDGE: L. Matthews, *M.* vice W. H. James.

Page 117.—WEST MIDLANDS GAS BOARD: J. C. Ingram, *Secretary*, vice F. H. Cureton, retired.

Page 187.—MANCHESTER JUNIORS: *Hon. Secretary:* T. W. Pickthall, Central Lancashire Group, Dane Street, Rochdale.

GAS IN MODERN INDUSTRY

By F. O. HESS,

President of the Sales Corporation, Philadelphia.

In the course of a paper, sponsored by the United States National Committee, to the World Power Conference Sectional Meeting at Rio de Janeiro, the author stated that in the U.S. in 1938 the total energy supply came from the following sources: Bituminous coal, 43.9%; anthracite, 5.6%; petroleum, 34.5%; natural gas, 11.8%; water-power, 4.2%. By 1952 the total energy requirement had increased by 80% over the 1938 figures, and there was a marked difference in percentage change: Bituminous coal, 31.4%; anthracite, 2.6%; petroleum, 39.4%; natural gas, 22.5%; water-power, 4.1%. While coal consumption had greatly increased to share in the total increase of 80%, its proportionate share had decreased from almost 50% in 1938 to 34% in 1952. In the same period natural gas jumped 90%. Industrial gas sales rose by 250%. The need for a high degree of heat control in modern industry explains the rapid growth of the use of gaseous fuel.

Seamless Steel Tubing

To typify the rôle which control of heat plays in industry the author instanced certain operations of a modern mill for seamless steel tubing—a very important branch of the U.S. steel industry. Size, quality, uniformity of properties such as surface and dimension are of importance. A solid billet or ingot of selected quality is pierced at 2,100° to 2,200°F. into a tube hollow, and then passes immediately through a tube mill to be elongated and rolled to the desired wall thickness. During this operation of rolling over a cold mandrel the tube cools to 1,100° to 1,300°F., depending on size, wall, and material. But it also cools non-uniformly because the front end is rolled thin first, and as a thin material it loses temperature faster than the heavier tail end which is still being rolled. Since this first tube rolling process is a fast but rather brutal displacement of metal, and because of other factors of mill design, the tube is not exactly round or the exact size of a commercial product. Therefore another operation follows—a pass through a sizing mill to round the tube and reduce it to final size of narrow tolerances.

This mill is performing hot work on the tube; and since the tube from the previous process is at non-uniform temperature along its length, the accuracy of the sizing is affected because of the different resistance to deformation of metal at different temperatures. A modern tube mill therefore has a continuous reheating furnace to raise the temperature of the tube for better working, and to balance out any temperature differentials at mill speeds, which might well be 100 to 200 ft. per min.

Size Control by Temperature

Such a continuous furnace is within a few feet of the mill, in line with the mill so that the front end of the tube is already in the mill while the middle and tail end are still being heated. To do this required fast, responding heating equipment and accurate control of the tube temperature. This has been accomplished; and any change in the tube size can then be carried out by mechanical adjustment of the different mill stands or rolls. Less obvious, however, is a more practical way to make final size adjustments of a normal production run. Instead of the mill operator adjusting the mill stands, he can now change the size and keep it within the narrow size tolerances by merely changing the temperature of the tube, which means adjusting his temperature control instrument up or down a few degrees. This changes the tube size a few thousandths up or down; and that is quicker, easier, and more convenient than adjusting mill rolls. 'We have therefore,' the author emphasised, 'a fuel requirement that calls for fast, accurate heating, and instant response to demands for temperature change; and we use the fuel in addition as a precision tool to effect the size changes and control size instead of using conventional and available mechanical tools.'

The seamless tube industry, continued the author, furnishes another example of multiple fuel use and effect. The petroleum industry, in its ever active and intensified search for additional oil and gas, has need for high strength casing to withstand the pressure of deeper wells and the other associated physical requirements. The high strength casing specifications call for a minimum yield strength of 80,000 lb. per sq. in., which in the past required manganese and molybdenum alloy steels, normalised and drawn after manufacture. By a carefully co-ordinated, timed, and controlled continuous heat-treating process that involves rapid heating to 1,600°F., instant quenching within seconds, and immediate short cycle draw, these specifications can be met with comparatively inexpensive almost plain carbon steel. In fact, a yield strength of 110,000 lb. per sq. in. is being regularly produced therefrom.

There is nothing particularly new in changing or increasing physical properties of metals or steels by heat treatment. Nevertheless, when, as in this instance, a single installation saves 300,000 lb. of molybdenum and 1.5 mill. lb. of manganese during the production of 80,000 tons of casing, it becomes an important fact that controllable fuel is replacing critical, scarce, and expensive materials by substituting a precision heat process for an alloying process. No other fuel but gaseous fuel has so far been able to fulfil these precise and rapid processing requirements, irrespective of cost.

A Triple-Function Fuel

A new phase in the glass industry is growing more and more important, and its product and potential are influenced by, and even depend on, gaseous fuel. This is the glass fibre industry. The conversion of glass into fine fibres is being done by having a high-velocity high-temperature gas stream heat the material as well as disperse it into the microscopic fibres at supersonic speeds. Gas fuel here is a source of heat, a high-speed forming tool with precision control features, and in addition it is a conveyor for the product. In this process gas fuel performs three different functions—each under independent control, each of an operating range capable of influencing the size and property and shape of the fibres to suit the hundreds of different uses.

And without gaseous fuel tin cans would hardly be the universal package for food and thousands of other products. The modern tin can industry dealing in hundreds of millions of containers per year is based on low unit cost and high automatic production with extreme precision and reliability to protect the contents of the tin can for the consumer. No other heating medium and manufacturing process has been developed economically to substitute gaseous fuel in can manufacture at modern speeds of production. The deceptive simplicity of the tin can is based on precision and control of essential heating operations.

Drying of Printing Inks

A further example in the author's brief survey of the gas industry has to do with printing and publishing. Some 15 years ago the influence of radio made itself strikingly felt in the publication field. Printing took time because press speeds were relatively slow and drying time for the printed sheet was even slower. In comparison to radio speeds, new values were lost, new stories were late, advertising values appeared unfavourable. A combination of new inks and gaseous fuel brought about a complete reversal of the existing trend. These inks were capable of drying instantly with heat application, and automatic heating apparatus built into the printing press completely eliminated extra drying time. This feat permitted quadrupling of printing speeds and immediate folding and binding, and therefore despatch of the finished product within seconds after printing. Gaseous fuel replaced time, plant investment and plant space, storage, and multiple handling. It influenced press design and was responsible for the purchase of hundreds of new high-

speed printing presses. Gas helped to generate a development trend which completely revised prevailing publishing technique, and gained for the industry news value, quality, high production, and lower unit production cost.

The author comments that 'these few examples, selected from many, should suffice to illustrate and emphasise that today fuel in industry is more than a source of heat—be it for production of basic materials like glass, steel, aluminium, plastics; be it for heat treatment of material once formed, or be it for comfort.'

WORLD POWER STATISTICS

The Statistical Year-Book of the World Power Conference, No. 7—Annual Statistics for 1950-1952*—is now available; and it is an immensely valuable guide and reference. It contains statistics of the resources, production, stocks, imports, exports, and consumption of power and power resources in all the countries of the world for which it was possible to obtain information. The power sources included are coals, brown coal and lignite, peat, coke, manufactured fuel, wood, petroleum, benzole, alcohols, natural gas, manufactured gas, water power, and electricity.

The Year-Book consists, of course, of a series of tables, most of the figures in which were supplied by the National Committees of the W.P.C. in the respective countries. It is devoted principally to annual statistics of fuel and power production, distribution, and consumption; but it also contains a considerable number of additional and revised estimates of resources. The annual statistics relate to 1950, 1951, and 1952, and where possible to 1953. Certain data for earlier years are included.

The Field Covered

It is the aim of the World Power Conference to establish continental and world totals of fuel and power resources, production, etc., and to indicate development from year to year. However, since the supply of statistics for certain countries of Eastern Europe has become progressively smaller, the establishment of totals for Europe and for the world in recent years has become impossible. Hence the use of certain convenient if not strictly logical terms: 'Iron Curtain countries' to signify Bulgaria, China (except Taiwan), Czechoslovakia, Eastern Germany, Hungary, Poland, Roumania, and the U.S.S.R. both in Europe and in Asia; 'Western Europe' to signify all the rest of Europe, including Yugoslavia; and the 'Western World' to signify the whole world except the 'Iron Curtain countries.' The 'Western World' includes the Near, Middle, and Far East, and Oceania, as well as areas geographically western. In brief, the term is used to describe conveniently that part of the world from which it has been possible to obtain at least some recent statistics. The W.P.C. sets out comparable statistics which are as detailed as possible. A limit is imposed on this endeavour by the fact that many of the more detailed statistics are compiled on different aspects of the subject, and in different ways, in different countries. Usefully included in the present volume is a bibliography of relevant publications. The lists of such publications in the various countries form the final section of the book. Throughout the compilation, metric units are used.

Outstanding in the tables relating to solid fuels is the sharp decline since 1950 in coal production in the United States (553 mill. tons in 1950, 449 mill. tons in 1953—86% of the 1950 production, and 30% below the peak production of 1944). Continental totals of the production of brown coal and lignite in 1948 was 258 mill. tons, of which nearly 70% was in East and West Germany. Production in West Germany increased rapidly till 1951, since when it has levelled-off.

Increased Petroleum Reserves

There are some new and some revised estimates of petroleum reserves. All the revisions are upward. The estimate for the United States of America of reserves technically and economically available under present conditions is again increased—this time by 10½%, equivalent to nearly 12 years' supply at the 1953 peak level of production. This does not include 794 mill. kilolitres of proved recoverable reserves of natural gas liquids and 51,464 mill. kilolitres of shale oil technically available. Nearly a million oil wells have now been drilled in the U.S.A., and more than half of them are still productive. The average annual rate of increase ('compound interest basis') in petroleum production in the 'Western World' over the seven years from 1946 to 1953 was 8%. It may be borne in mind that if the 1950 output in Iran were fully resumed, a further 30 mill. to 32 mill. tons per annum would be available. There has been a rapid rate of growth of petroleum production in Asia; and also, though the quantities are relatively quite small, in Europe. The predominance of North America, however, continues. In the United States, more than one-half the total world supply (excluding the 'Iron Curtain' countries) was produced in 1952; and the same was still true in 1953. In 1952 about 12% of the world supply of refined petroleum was produced in Europe, as compared with 8% in 1950—representing an increase in quantity during the two years of nearly 75%.

Total production of benzoles amounted to about 1,800,000 kilolitres in 1950 and about 2,060,000 kilolitres in 1951—an increase of 14%. In 1951 about two-fifths of the total reported was produced in the United States, about one-fifth in the German Federal Republic, and one-fifth in the United Kingdom. Production of benzoles in the German Federal Republic in 1952 not having been reported, a comparable total for that year cannot be computed. Total reported production in other countries decreased from 1951 to 1952 by about 3%, but this decline was due to a decrease by about 13% in United States production. Total reported production in countries other than the United States and Germany increased steadily from 1950 to 1952 by 8% per annum.

Greater Use of Natural Gas

Although 96% of reported reserves of natural gas, and nearly 90% of reported production, occur in the United States, this fuel is becoming of increasing importance in many parts of the world. The statistics show how, in the U.S.A., natural gas is increasingly used by gas supply undertakings to re-form and enrich manufactured gas. In Canada, the U.S.A., and Mexico, reported production of natural gas in 1952 was about 3¼ times as great as in 1936; in Venezuela, 8¼ times as great; while in each of the countries, Brunei, Indonesia, and Italy, production has increased since the end of World War II from unimportant quantities to more than 1,000 mill. cu. m. in 1952.

Quantitative estimates of natural gas resources are reported from relatively few countries, but new reserves of considerable magnitude continue to be discovered. Of five revised estimates given in one of the tables, three (those for U.S.A., Chile, and Japan) represent increases, while rich reserves of unknown magnitude have been found in Pakistan. Reported world production of natural gas in 1952 was about 325,000 mill. cu. m. Production in 'Iron Curtain countries' was not included in this figure. In 1936, production in these countries amounted to about 4,000 mill. cu. m. out of a grand total of about 75,000 mill cu. m.

Gaps in the reported statistics of manufactured gas occur in such a way that it is impracticable to compute continental totals. In the Year-Book attention is drawn to the increased use of natural gas by gas supply undertakings in the U.S.A., Belgium, and Italy, and to the consequent decrease in the production of manufactured gas by gas undertakings in the United States and in Belgium.

Turning finally to electricity, world production in 1952 (excluding production on the mainland of China) has been estimated at about 1.14 mill. kWh, or about 570 kWh per head of population. It is also estimated that world production increased from 1948 to 1952 at an average rate of 9½% per annum ('compound interest basis'). Nearly half the total was produced in North America and more than one-quarter in 'Western Europe.'

* Statistical Year-Book of the World Power Conference, No. 7. Edited by Frederick Brown; published, on behalf of the Central Office of the W.P.C., by Lund Humphries & Co., Ltd., price £2.

Gas in FRANCE

abstracts from the French technical press by 'ASHTON'

The following two paragraphs conclude from p. 242 ur review of *La Semaine Gaziere*.

M. **J. Groff** (Scientific Adviser on Lubricants to the nstitut Français du Pétrole) on Some Aspects of Lubrica- ion in the Gas Industry. The consumption of lubricants, hich was before the war of the order of 300 g. per ,000m³ (say 20 lb. per mill. cu.ft.) of gas manufactured, as today dropped by nearly 50% of this figure. Oils escribed as 'ordinary' form 75 to 80% of the total; he rest are special oils suited for such purposes as turbines, ear boxes, etc. The lecturer described the progress made uring the last 15 years in the quality of lubricants and in heir utilisation. 96% of lubricants are of petroleum rigin and their preparation was briefly described. They ange from ordinary grease, from the most fluid to the hick cylinder oils, but for special purposes, not only are hey filtered and cleaned to eliminate all undesirable oreign matter, but a technique of additives has been developed to inhibit oxidation, corrosion, premature con- gealing and to resist heat. Special additives inhibit the seizure of gears under high pressure. In the utilisation of lubricant M. Groff emphasised the importance of periodi- cal inspection of mechanical parts. 'It is always better to make periodic inspection of essential machines and appliances than to wait to send them to the workshops when they are least expected, like moribunds that are sent to hospital.'

Decorating the Gasholder

And, finally, M. Veillon returns to the subject of the camouflage and decoration of gasholders—in a short article beautifully illustrated by a 'double spread' in colours. Peace-time camouflage is to 'save the view,' to make the gasholder as inconspicuous as possible. But decoration is surely a new idea. Some years ago such an idea, M. Veillon says, would have been thought fantastic. But 'today, after slow evolution, I do not hesitate to pre- sent this audacious notion and to recommend its applica- tion. . . . From decorative camouflage to simple decora- tion, there is theoretically only one step to clear. But the end is no longer to attenuate the effect, it is that of under- lining it, and now *to show our gasholders with pride'* (author's italics). M. Veillon proposes to paint gasholders with designs in bright colours artistically arranged—to express an aerial æsthetic in construction.

Further Abstracts from *Le Journal*

M. **A. Renauldon** (Joint-Director of Research, Gaz de France) discussed methods of calculating the proportions of a system of transmission and for distribution of gas. Recent work by M. Renouard claims to supersede all other previous formulæ. The treatment of the subject was largely mathematical and does not lend itself to a brief abstract, but it is interesting to note that methods used in the calculation of electrical transmission are found to be applicable to that of gas, and the two services are co- operating in this work.

And M. **P. Mougin,** Inspector-General of Gaz de France and Vice-President of the International Gas Union, spoke on the Gas Industry 'abroad.' In the course of his lively and witty address, M. Mougin said: 'Apart from statistics, it is interesting to note the position of the gas industry in foreign countries. In England, one cannot conceive life without gas, which, with its complement, the slot meter, is as much a part of existence as tea or cricket. In Germany the climate is different; the concentration of coke ovens has led to the creation of vast systems of trans- mission which has created 'a certain mystique of gas from a distance.' . . . . In the U.S.A. there is a psychosis of natural gas, the cheapest and most abundant of all fuels, and the arrival of natural gas to an American town gives rise to vast manifestations of publicity. In Italy and in Canada "l'ambiance gazière" while less spectacular is none less real.'

The Stages of Gasification

The June issue of J. des Usines à Gaz carries a pre- liminary report of experimental studies of the evolution of cracking of hydrocarbons in the presence of water or carbon dioxide, by M. F. Guyomard of the Physical Research Section of Gaz de France. In most of the plant used in the gasification of hydrocarbons the reaction times are chosen so that chemical equilibrium is attained. But there are examples, such as the manufacture of acetylene by the incomplete combustion of methane, which show that it may be advantageous to stop the reactions before equilibrium. 'We have therefore been led to think that in the course of gasification reaction, the intermediate stages may yield gases which are as interesting as those obtained at the end of the reaction. A knowledge of the evolution of mixtures of gases in the course of gasification has not only considerable scientific interest, but may have great practical interest for the Gas Industry.' Physical chemistry can now predict with much exactitude states of equilibrium, but there is almost entire ignorance on speeds of reactions. Experimental methods are therefore essential to a solution of the problem.

In this first stage of the work, the experimenters have studied successively the reactions of the cracking of pro- pane in the presence of water vapour or carbon dioxide and the gasification of gas oil in the presence of water vapour. The method is to pass the mixture to be studied along a tube heated to a predetermined temperature and to draw off the products of the reaction at varying distances from the entrance of the tube in order to determine the evolution of the reactions in terms of time. Full results in tabular and graphical form are reported. The results are preliminary. The essential problem is stated to be that of the gasification of the heavy oils.

Analysis of Solid Fuels

As we announced some weeks ago, Dr. J. G. King will shortly begin a series of articles in *Fuel* on recent develop- ments on an international scale in the standard methods of analysis of coal and coke. To the June issue of the French Journal M. M. Renaudie, Chief of Chemical Research of Gaz de France, contributes a general essay on the same question with reflections on the whole question and the methods of arriving at the several standards. He reflects, for instance, on the modern attitude to standardisa- tion in general. Two opposing tendencies are observed. Some people, accustomed to routine methods, seek to standardise them. 'Without searching for an example in detail, let us note at this point the "ferocious" attach- ment of many Anglo-Saxons to such inconvenient measures as the inch, which has recently been proposed as the international standard of length.' M. Renaudie recog- nises the cost and inconvenience to which we poor Anglo- Saxons would be put if we had to adopt the metric system of measurement. But 'it is inconceivable, in this atomic age, to quote dimensions of apparatus such as $\frac{3}{16}$ in. or 2 ft. 6 in., as in some works on standardisation.'

The other tendency is equally regrettable. It is that of standardising scientific methods arising out of techniques in the full tide of evolution as if their authors were assured of having established something absolute and immutable. 'Such crystallisation would be one of the surest means of stopping all progress in analysis, erecting into dogma the truth of the moment.' Standards must be practical, always recognising that the precision of the

sample is, in most cases, much less than that obtained in even the simplest analysis.

The organisation of I.S.O., the International Organisation for Standardisation, is briefly described together with the present position of the work on solid fuels. The question of the classification of coals is for the moment adjourned. In his conclusion M. Renaudie remarks that there is one preponderant element in the quality of analyses which cannot be standardised—the operator. Must we wait for some electronic robot to replace him?

An address by M. Robert André, President of the Union des Chambres Syndicales of the Petroleum Industry, on the 'Coal-Petroleum problem and its influence on the Gas Industry,' is reported in the July issue of *J. des Usines à Gaz*. World production of coal he said, reached 1,300 mill. tonnes in 1913. Since then it has varied from 1,350 tonnes in 1929, sinking to 1,160 in 1939 and rising to 1,500 mill. in 1951. But the part played by coal in total world energy consumption fell from 82% in 1920 to 49% in 1950. Petroleum is taking a leading position. The consumption of petroleum reached 654 mill. tonnes in 1953. This production represents 32% of the total world utilisation of energy, but if one adds the 13% represented by natural gas, petroleum in liquid or gaseous forms accounts for 45% of the world's energy, or nearly equal to the part played by coal. Indirectly, these figures show that water-power, valuable as it is, only accounts for 6% of the energy exploited by man.

In this general picture, what is the position of France? In spite of deposits less rich than those available to her neighbours, coal has continued to meet her essential requirements, while forcing her to develop her particularly abundant hydraulic resources. Coal still represents 69% of France's total energy consumption, but it should be noted that coal production remains practically constant at the 1929 figure of 55.4 mill. tonnes.

France remains, among industrially developed nations, one of those where the consumption of energy is the lowest. The relative poverty of her mines and the difficulty of exploiting certain of her coal seams is leading her to seek in petroleum the new resources she needs. And indeed a great deal in this direction has been accomplished. The capacity of her refineries has reached 25 mill. tonnes for a consumption which in Metropolitan France and the French Union necessitated in 1953 the refining of about 18 mill. tonnes, a figure which may reach 24 mill. in 1957.

To this must be added a development in the future of her own resources in crude oil. She already has access, through the Cie Française, to production in Iraq among the richest and cheapest in the world, which will attain 10 mill. tonnes a year. But at the same time exploration of the sedimentary strata of France and her Territories has been seriously undertaken with encouraging results. The percentage of success is greatly superior to the average obtained in America. Results tend to prove that there may exist in South West France a very rich petroleum region. Results of the same order point to success in other Metropolitan regions, and experts are agreed upon the possibilities of African regions and more particularly of the Sahara.

In the more or less near future the question of markets will arise.

In the field of the motor petrol has a position which is hardly disputed. It is between coal and the heavy fuel oils that competition is developing. For shipping, the use of coal has fallen since the beginning of the century from 50% to 13%. And developments of the same order are taking place with the railways. Petroleum is competing with coal in the light industries and the domestic fields, though here a reasonable equilibrium may be expected. On the other hand, the requirements of the coke ovens, gasworks and central power stations must remain for a long time the province of coal; and this market, which represents 26 mill. tonnes out of the total of 65 mill. consumed, is likely to increase considerably.

With regard to gas, M. André thought that competition between gas and fuel oil for certain uses could be neglected. The choice is dominated by questions of technique and coal price, but generally speaking the positions occupied by gas are far from being vulnerable or appreciably menaced. On the other hand, petroleum can play a complementary role in this great industry either by supplying raw material at an advantageous price or by pushing further than the gas industry can itself the diffusion of this form of energy. The operations of refining necessarily result in the production of incondensable gases. These can be used, at least in part, for the energy needs of the refineries themselves, but there is also the choice of using the fuel oils and selling the gases, either as sources of chemicals or for distribution in town gas. There is a certain advantage in the latter course and particularly so in the case of the natural gas which petroleum exploration is making available. The transmission of gas over long distances and the extension of distribution systems to relatively low consumption regions are costly. Petroleum may meet these needs at a lower cost and, in the forms of butane and propane, make gas available to small and isolated concentrations of population.

The expansion of French economy must not run only in the old moulds. If heavy industry is closely tied to coal, the development of water power has encouraged the growth of electro-metallurgy and electro-chemistry round the barrages. In the same way the discoveries hoped for in liquid and gaseous petroleum, the regions surrounding the great ports, the sources of imported petroleum, must permit the creation of new industrial enterprises in zones less favoured in the past by low-priced energy and where large fractions of the population will find more remunerative employment.

M. André concluded with a few remarks on the possibilities of the future, particularly with reference to atomic energy.

Coke Ovens in the Paris Region

Members of the Association Technique visited the coke oven plant south of Paris at Alfortville of which there is a brief description in the July *Journal*. The programme of construction here is to build plant to carbonise 1,500 to 1,600 tonnes of coal per day producing coke of high quality suitable for steel-making. Annual production is to be 350,000 tonnes of coke available for sale with 200 mill. m³ (say, 7,000 mill. cu.ft.) of gas.

The works now contains five batteries each of 15 ovens, carrying a charge of 15 tonnes. These ovens are of the Koppers, compound, underjet type. Coke will be dry-cooled on the Sulzer system. There are four producers making fuel-gas from coke for heating the ovens. Automatically charged, they are 3.40 m. dia. with water jackets raising steam at low pressure for producer injection and a waste-heat boiler on the gas stream raising steam at 15 kg/cm² (213 lb./sq. in.) superheated to 300°C. Two further producers are on order, one to adjust the C.V. of the gas (gas from the East, gas at Alfortville and propane), the other as standby.

The coal and coke handling and ancillary plants are briefly described. The plant will also include stocking for 1,200 tonnes of propane to give a mixture of propane-producer-gas at 4,500 kcal/m³ (470 B.Th.U./cu.ft.) to provide peak load of 200,000 m³ (say 7 mill cu.ft.) in 24 hours, together with an installation for the manufacture of blue water gas and one for cracking heavy oil with a capacity of the order of that of the coke ovens.

The July issue also carries a report of a day's conference, organised by the French Institute of Fuel and Energy, on the subject of de-dusting flue gases and industrial gases. Thirteen papers were presented and discussed. De-dusting of gases is necessitated by considerations of hygiene, security, aesthetics, atmosphere pollution and even economy (in the recovery of dusts of value). The several techniques, mechanical, electrical, thermal, were exposed in theory and practice.

Effluents

The same issue carries a brief report of an international conference held at Liège in April, organised by the Belgian Centre of Water Research. Thirty-eight communications were presented covering criteria of an industrial river, auto-purification of rivers, the measurement of solid and liquid output, methods of treating industrial effluents, the

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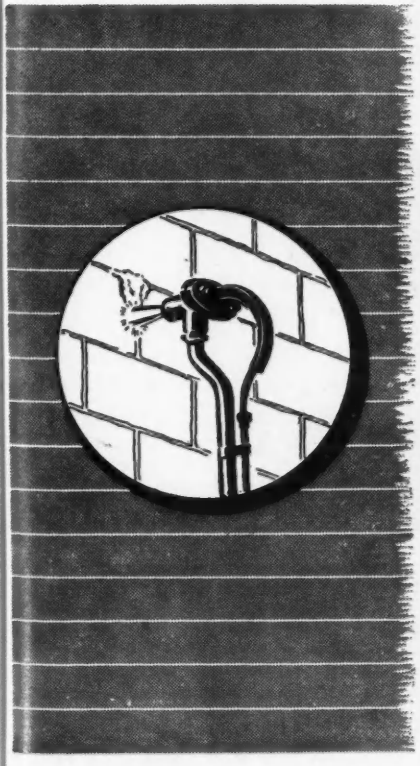

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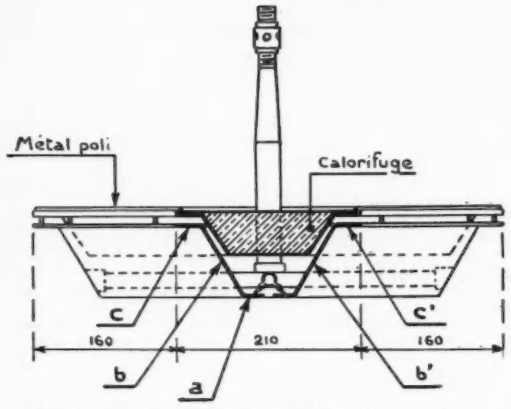
problem of channels and accessories for effluents. New Belgian Regulations were announced. The Director of the British Water Pollution Department described methods of treating, by activated sludge, sewage water with high content of dephenolated liquor from gasworks, together with the terms of the British Regulations of 1937.

The communications show that the same technical and administrative problems arise in the different countries of Europe but that the regulations are different and generally impressive, and that no country can yet claim to have found completely satisfactory solutions.

A New Overhead Radiator

M. M. Fischer, of the Applied Physics branch of the Research Department Gaz de France, describes an overhead gas heater with a horizontal radiating surface. Panels of this class are generally inclined and a part of the heat



Scheme drawing of horizontal overhead radiator.

radiated is not directed towards the floor but expended towards the horizontal; their efficiency is reduced with their inclination to be vertical.

The form of the appliance (shown in the figure reproduced from the August issue of *J. des Usines à Gaz*) is that of a horizontal cross with rows of burner orifices enclosed in a trough, the flames playing in pairs on the horizontal facettes A. The inclined facettes, b, b', and the top plate of polished metal are heated by the products of combustion. Secondary air is supplied by holes in the horizontal facettes. Above the burner ramps is a cross of light refractory (*calorifuge*). The total width is 53 cm., the height of the body is 10 cm., the weight of the whole fitting is 8 kg. (say 17½ lb.). Gas consumption is 1,050 litres (37 cu.ft.) per hour. It is claimed that the radiation efficiency is 59.7%. Gaz de France has applied for a patent for this appliance, covering other suitable forms, (e.g., straight or curved), besides that of the cross here shown.

Algiers

A new gasworks at Alger-Gué was inaugurated by M. Léonard, Governor-General of Algiers, on June 28. Designed for a capacity of 300,000 m³ (say, 10 mill. cu.ft.) per day, it can be extended to a daily capacity of 500,000 m³ (say 17.6 mill. cu.ft.).

The population of the Algiers region has risen rapidly in the last 50 years to 266,000 Europeans and 268,000 native peoples in 1953 and it is expected to rise further to a total of 700,000 inhabitants by 1965. Gas consumption, almost entirely by Europeans, has attained 45 mill. m³ (1,575 mill. cu.ft.) per annum. Domestic consumption is high and annual consumption per consumer is 670 m³ (23,600 cu.ft.).

The new works is laid out in two units each of 150,000 m³ daily capacity and each consisting of a battery of six coke ovens designed to carbonise 75 to 90 tonnes of coal per day making gas at high calorific values, 5,300 to 5,700 cal/m³ (550-600 B.Th.U./cu.ft.), one automatic water gas plant carburetted with heavy oil of a daily capacity of 60,000 m³ (say 2 mill. cu.ft.) and one automatic plant of the same capacity for cracking heavy oil over a catalyser. The possibilities of variation of output of such a unit is extremely great, extending from 30,000 to 150,000 m³ per day. Coke breeze through 0.5 mm broken to 0.33 mm is returned to the coal feed to coke ovens. Small coke, 5 to 12 mm is fed to the producers of the CWG plant which also use at certain times the size 10 to 20 mm. But the CWG plants can also use the larger sizes and their combination with the oil cracking plants facilitates the control of the coke market. Automatic operation and regulation, and the aesthetic appearance of the works are important features which have been carefully and effectively studied.

GERMAN GAS PROBLEMS

Communicated by Prof. Joh. Körting, Karlsruhe.

The general situation in the German gas industry is very similar to that in Great Britain. What was hard pioneering work in the time between the wars—to sell gas for commercial and industrial purposes—has become a matter of careful selection as to which of the customers should be preferred and which must wait. There is even some talk about 'gas hunger.' The pressing demand for gas by industry can be attributed to the growing density of the population, the shortage of raw materials, and the trend to higher quality of the manufactured products, which calls for increased application of a source of heat which can be readily controlled.

In Western Germany, gas-making is coupled rigidly with coke production. In 1953, 9,900 mill. cu. m. (350,000 mill. cu.ft.) were delivered from the coking industry, and 2,200 mill. cu. m. (77,000 mill. cu.ft.) from gasworks. Owing to the extensive application of central heating, domestic coke enjoys a stable market. On the other hand, fluctuations in demand by the iron industry influence the coke market in general and have a marked effect on gas production.

In 1953 coke production was higher than in 1952, and reached 42.2 mill. tons. During the same period inland consumption decreased to 24.6 mill. tons, and exports to 10 mill. tons. The trend towards declining exports is expected to continue owing to competition from oil. At the end of 1953 gasworks stock amounted to 432,000 tons (180% of the production in December), and there were 3,320,000 tons at coke oven plants (128% of the December production). Gasworks stocks have diminished since then owing to a cold and long winter, but the tendency of over-production is still apparent. In comparison with Great Britain, disposal of surplus coke for the manufacture of water gas and carburetted water gas plays a small rôle in Germany. Natural gas and refinery tail gases are entering the field in ever-increasing quantities. They are finding application in the chemical industry, which is calling for more gas as a raw material.

The whole situation has given a very strong impetus to research on complete gasification. Installation of new plants has been delayed to some extent by lack of capital, but within a year a plant of an annual capacity of 150 mill. cu. m. (5,250 mill. cu.ft.), treating low-caking coal, should be in operation.

To raise the capacity of intermittent vertical chambers for peak gas production, enrichment by the addition of oil to the chambers has been employed. Addition of 1% to 2% of oil is equivalent to a saving in gas coal of 10% to 15%. For the same purpose, the controlled use of liquid petroleum gases has proved successful. Changes in gas characteristics arising out of these operations have stimulated research on burner design; and this research continues.

The Association of British Chemical Manufacturers has published a provisional programme for the Chemical Works Safety Conference to be held at Harrogate, November 5-7. The provisional programme and application forms for delegates may be obtained from the Association at Cecil Chambers, 86, Strand, London, W.C.2.

Flame Failure Equipment

Report No. 560/53 of the Industrial Gas Development Committee of the Gas Council sets out the results of an investigation carried out by the North Thames Gas Board into the operation of a new addition to the range of electronic flame failure equipment manufactured by Elcontrol, Ltd., 10, Wyndham Place, London, W.1. The model in question (Elcontrol F.S.5M) is designed for fully automatic control in conjunction with a viewing head comprising a lead sulphide cell which is sensitive to infra-red radiation. The unit is housed in a pressed mild steel case. Coloured lamps, which are fitted to the top section of the case, indicate the state of the plant. For control purposes, there are two switches below the lamps.

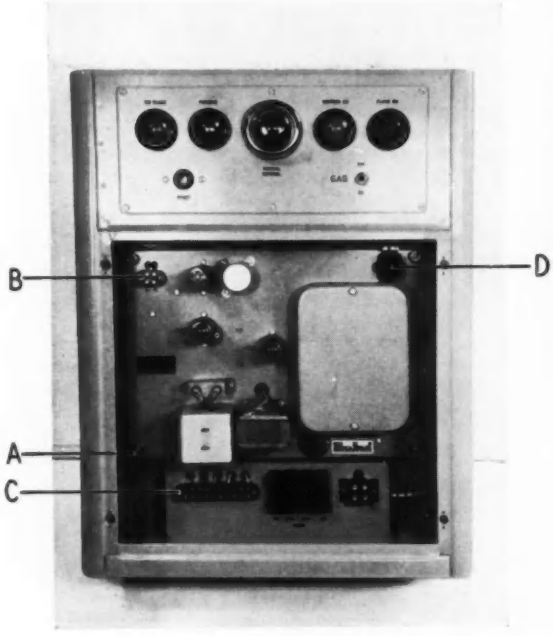


Fig. 1

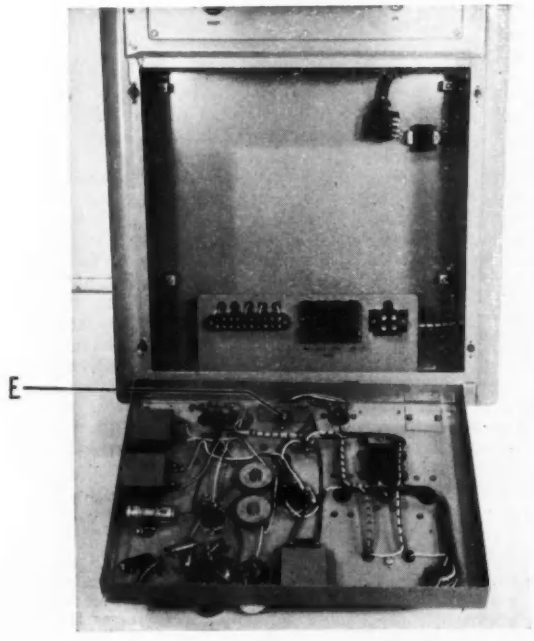


Fig. 2

Access to the inside and terminal block is gained by removing the front cover, which is held in place by four quick release screws. The inside of the unit is shown in Fig. 1. The internal circuit is mounted on a mild steel chassis held in the case by four knurled knobs (A). The viewing head connections are made to the terminal block (B) in the top left-hand corner. Standard insulated wire is used for this purpose, but it must be run in a separate conduit to the side of the case as near to the terminal block as possible. It is recommended that the absolute minimum length of wire is unshielded. Fig. 2 shows the chassis removed from the housing.

To enable the chassis to be removed easily, all the leads except the viewing head leads are brought from the terminal block (C) to a multi-pin plug and socket (D) in the top right-hand corner. Before removing the chassis this plug is removed and the viewing head leads are disconnected. On the back of the chassis is a switch (E) marked 'recycle/non-recycle' (Fig. 2) which must be set for the required operation before starting the plant for the first time.

For fully automatic operation, such as would be used on an air heater, the wiring diagram shown in Fig. 3 should be used. With this circuit the controller can be made to operate in three ways: (i) Fully automatic, non-recycling; (ii) fully automatic, recycling; (iii) manual control.

For this operation the switch at the back of the chassis must be moved to 'non-recycle.' With the switch in this position, if the pilot fails to light, or upon running flame failure, the plant will automatically switch to safety shut-down and remain in a state of lockout until the reset button is pressed.

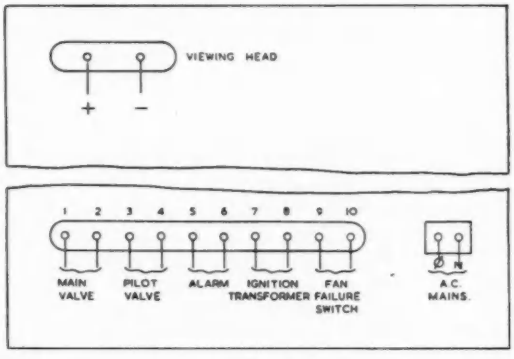


Fig. 3

Before starting the plant the gas switch on the panel is turned to 'off.' If a fan is used in conjunction with the plant this is started so that the fan failure switch will close, causing power to be put on to the control circuit. The gas main cock is opened. When the gas switch on the panel is moved to 'on' the white 'purging' lamp lights. This continues to burn throughout the purging time, normally 3 min., during which period any unburnt town gas which might be present will be expelled from the system. Although purging time is usually set for 3 min., purge times of 1 to 10 min. can be provided. At the end of purge time, the white light goes out and a yellow light shows on the panel, indicating that the pilot gas valve and the ignition transformer are energised. The spark continues for 10 sec., during which time the pilot flame should be established, the viewing head detecting the flame and causing the green 'flame on' lamp to light and the main gas valve to open. At the end of the 10 sec. period, the yellow 'ignition on' lamp goes out and the plant continues to operate, indicated by the green lamp on the panel until fan or flame failure. If the pilot fails to light within the 10 sec., the pilot gas valve closes immediately; if fan or flame failure occur after successful ignition, main and pilot gas valves close. In both cases a red 'no flame' lamp shows on the panel, and the alarm sounds. When the reset button on the panel is pressed the purging and ignition cycle is restarted.

The controller can be made to recycle by throwing the switch at the back of the chassis to 'recycle.' With the controller set for this operation, the lighting up sequence is the same as for 'non-recycle.' Upon running flame failure, instead of locking out immediately, the main gas valve closes, the pilot valve remains open, and the spark automatically comes on. As in the

starting cycle the spark will continue for 10 sec., but there is no purge time. If the flame fails to re-establish, the pilot closes and the control switches to a state of lock-out until the reset button is pressed, when the full lighting sequence is started, including the purging time.

If a fault has developed, traced to the control or some cause which cannot be remedied quickly, the plant may be switched to manual control and operated without the flame failure device. This is made possible by disconnecting from the chassis the multi-pin plug (D) and inserting it in the socket revealed in Fig. 2. When the gas switch is turned to 'on,' an orange lamp lights on the panel, the main and pilot valves open, and the ignition transformer is energised. The spark is operated continuously while the gas switch is in the 'on' position. Before switching on, however, both main cocks should be shut off so that a spark can be obtained at the burner before the pilot is turned on. When the pilot is established, then the main gas cock can be opened.

Lighting Industrial Gas Equipment

Following discussion, the Industrial Gas Development Committee of the Gas Council has issued Report No. 551/53 concisely defining the basic procedure for lighting industrial gas equipment. The report should prove useful when dealing with manufacturers and executives interested in the operation of gas heated plant.

The following is the procedure for lighting up:—

(i) Check that all burner and pilot cocks are closed. (In the event of any burner or pilot cock being in the open position, these should be closed and the appliance should be ventilated for a reasonable time, having regard to the design—the individual manufacturer to specify the time.)
(ii) Check that flue dampers and appliance doors to working space (if any) are open.
(iii) Start any air blowing and exhaust fans.
(iv) Open the appliance isolating gas valve.
(v) Operate any manually reset air or gas controls apart from flame failure or other interlocks.
(vi) Operate flame failure device and ignite pilot. (Instructions should be issued in relation to the type of device employed.)
(vii) Where permanent pilots and flame failure devices are not fitted, apply a lighted torch to burner and turn on burner cock (where air blast equipment is employed, air cocks should be partially opened for lighting). Make sure that the main burner flames are fully established, and follow up procedure with other burners.
(viii) Appliance doors may now be closed. (Special instructions on this point might be necessary with some equipment.)
(ix) Check that burners and pilots are still properly alight.
(x) Adjust to correct working conditions.

On closing down, the sequence is as follows:

(i) Close each gas burner cock separately (followed by its associated air cock, if any).
(ii) Close each pilot cock and any weep cock.
(iii) Close appliance isolating gas valve, if circumstances require it.
(iv) Switch off air blowing and exhaust fans.
(v) Where the process permits, it is advisable to arrange to leave the appliance well ventilated.

The report emphasises that manufacturers will need to make modifications to suit their particular plant or process. The foregoing procedure is therefore not to be followed literally in all cases. In particular, where conveyors are involved or special electronic or ventilating equipment, the instructions should be adjusted accordingly.

GAS PURIFICATION & CHEMICAL CO., LTD.

Great interest has been roused in the industrial and financial worlds by the news that a number of firms specialising in various branches of electrical engineering are to fuse their interests under the control of Gas Purification & Chemical Co., Ltd., as wholly-owned subsidiaries. The firms concerned are: Grundig (Great Britain), Ltd., and its controlled subsidiary, Besson and Robinson, Ltd.; Smart & Brown (Machine Tools), Ltd.; and Johnson British Electric, Ltd.

Grundig (Great Britain), Ltd., and Smart & Brown (Machine Tools), Ltd., bring to this country amplifications of the industrial and commercial applications of the tape recorder, with special reference to the working of machine tools and factory machinery by tape recorder control. Already as many as fifty different operations can be put into action at the same time from one tape recorder; and the promoters visualise the altogether, or partly, tape controlled robot factory.

The Tape Recorder in Industry

Messrs. Grundig state that the tape recorder, which records magnetic impulses on a strip of oxide coated plastic tape, was originally developed solely as a method of recording sound for subsequent repeated re-play. It has been modified to accept other forms of impulse than sound, and these impulses can be fed to electrical relays which in turn will actually operate the controls of a machine.

Selective frequency control is employed. This means that a special electrical frequency is allotted to each of the operations required to be carried out. For example, a turret lathe may be expected to operate fast and slow feed, indexing of operating, traversing, centering, drilling, tapping and parting-off. A frequency is allotted to each of these functions, and these frequencies are recorded on the tape in the desired operation sequence. This 'programme,' as it is called, is prepared very simply by the operator going through the production sequency manually and automatically producing a tape which is exactly synchronised with his manual operations. The tape carrying the completed programme is then passed through the tape recorder itself.

The recorded frequencies are fed from the tape recorder to a series of circuits each of which trips off a relay which moves the necessary control. For mass production a continuous tape may be used; alternatively the same programme can be reproduced indefinitely on a lengthy tape.

There is virtually no limit to the number of operations that can be directed from the tape at any one time—in the same fraction of a second it is possible for fifty operations to be triggered off. In its present stage of development this control method is most suitable for the mass production of parts for use in light and heavy engineering, particularly where short-term runs are concerned. Planning and methods departments can produce the taped programme well in advance of any change-over, which leads to a high degree of flexibility and smoothness in operation.

Apart from the system outlined above, the tape recorders are being used more and more in industry for such jobs as the production of stock statistics and records of production. Permanent records for subsequent transcription of serial numbers on a production line are easily made, while stock-taking—which generally involves the covering of a large floor area—is simply carried out with the aid of a hand microphone connected to the tape recorder by a length of light-weight cable.

And in Commerce

In commerce, too, the tape recorder is becoming more and more useful. Where announcements—often in several different languages—have to be repeatedly broadcast, a tape recorder is invaluable. It never makes a mistake, its voice never tires, and of course the message can be changed if necessary at a moment's notice.

Many big shops use press-button operated tape recorders to outline the attractions of any particular department and for providing a background of light music and even, in some cases, to replace the often bored and weary lift attendant. In such cases the tape recorder is installed in the lift itself, and the announcement of the delights awaiting on each particular floor is triggered off as the lift approaches its destination. At least one cinema in the Midlands uses a tape recorder to give patrons who telephone a résumé of the particular day's programme.

For advertising the tape recorder can be used to provide displays, with illumination, animation and sound (all from the same tape), to change programmes on outdoor and indoor screens, and to control illuminated signs, etc. On the research side the recorder is used largely for the recording and analysis of noise, particularly in the motor and aircraft industries, and for subsequent examination of instrumental information.

And above all the tape recorder can be used for dictation of correspondence, when and where convenient.

A NEW WORLD SILENT BEAM GAS FIRE

The HADRIAN

***THE HADRIAN*—especially designed to enable Gas Boards to offer a maintenance-free Silent Beam Fire on the most attractive Hire Purchase terms.**

Combining striking contemporary appearance with highest quality at low price, the Hadrian leads the way in helping the Industry to increase the Space Heating load.

RECOMMEND

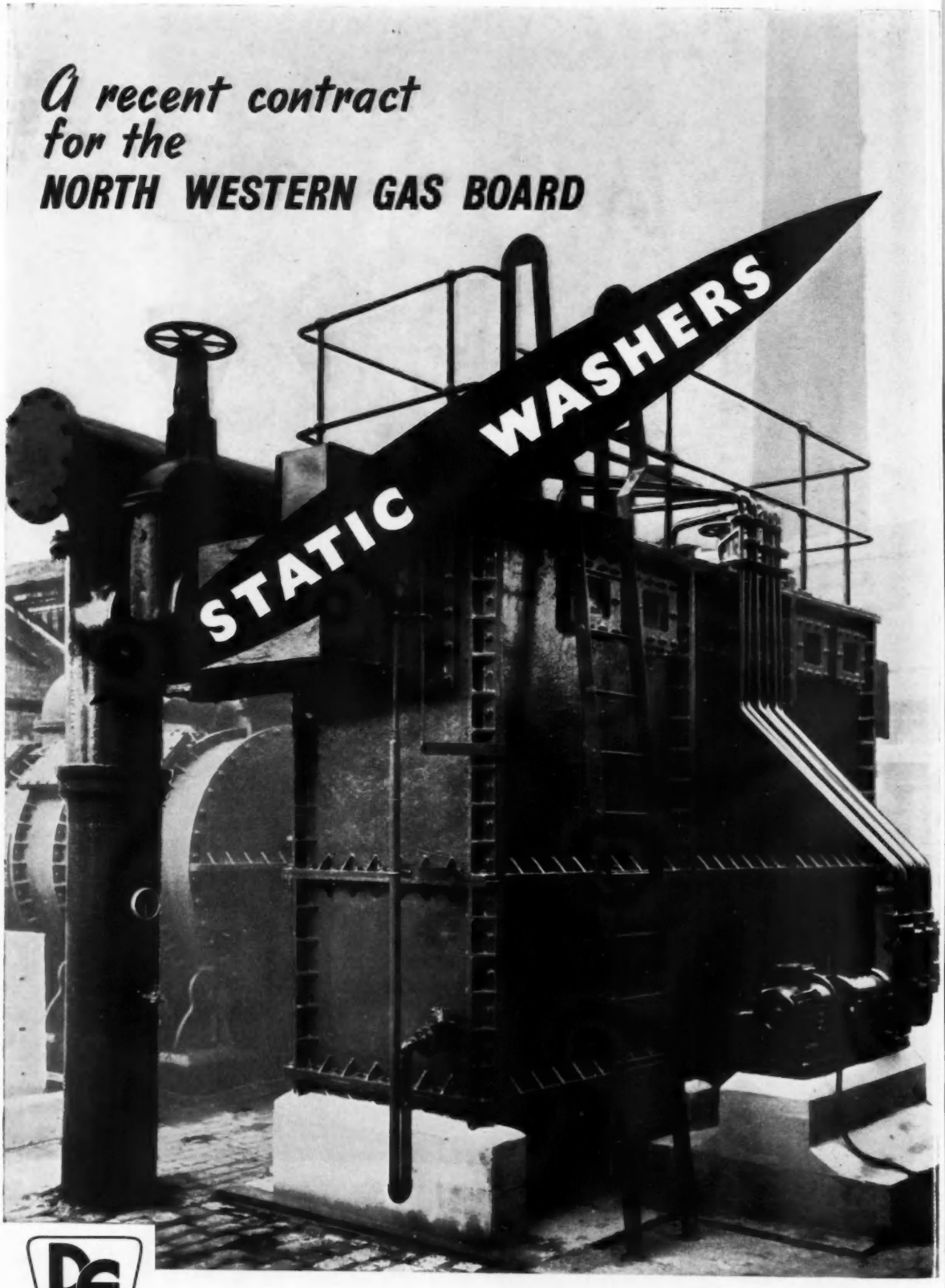
NEW WORLD

PRODUCT OF Radiation Ltd.

SPACE HEATERS

RADIATION GROUP SALES LTD. 7 STRATFORD PLACE, LONDON W1 MAYFAIR 6462

A recent contract for the
NORTH WESTERN GAS BOARD



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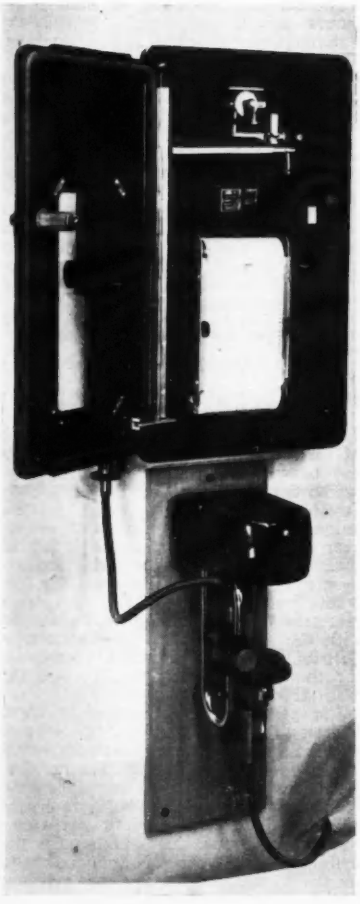
Wobbe Index Recorder

To ensure a high standard of performance of gas appliances, many manufacturers are now adopting the Wobbe index system of classification, which takes into consideration both the calorific value and the specific gravity of the gas supplied. And following an agreement reached between the Society of British Gas Industries and the Gas Council, town gas in this country is classified into six groups, according to the Wobbe index. The range is below 531 to over 760.

It has been established that, to effect accurate control over the heat input to



an appliance and so to obtain the best thermal efficiency, the Wobbe index must be controlled. Means of determining and recording the Wobbe index of the gas supplied are therefore desirable. Hence our interest in the Sigma Wobbe index recorder, with which, by the addition of the Sigma-Kent control unit, effective control of the Wobbe index can be achieved.

The equipment, which is shown in the accompanying illustration, consists essentially of two parts, one being concerned with the regulation of the flow of gas to the burner, the other with the sensing and recording of the heat value of the gas consumed.

The Wobbe flow regulator is designed to regulate the flow of gas to the burner so that the actual flow corresponds to a constant flow at 60°F. and 30 in. mercury pressure when the specific gravity of the gas remains unchanged. The gas entering the instrument is governed-down to 1 in. W.G. If the inlet pressure is higher than 36 in. a preliminary 'heavy' governor is also used. The gas then passes through a highly sensitive governor incorporating an oil-sealed bell. This governor, which is capable of maintaining a small pre-determined pressure with great accuracy, passes gas to an orifice where a pressure drop takes place. The pressure of the gas is slightly above atmospheric on the outlet side of the orifice, and when this condition is satisfied the regulator automatically senses very small changes in specific gravity, and also compensates for changes in barometric pressure and room temperature. The orifice is located in the casting at the lower end of the tube assembly and can be removed for cleaning by unscrewing the orifice cap.

Recording Mechanism

The recording mechanism is actuated by the heat from the gas which passes along a flexible tube to the burner situated at the bottom of a steel tube through which the products of combustion are vented to atmosphere. This tube is surrounded by a second steel tube, concentrically mounted, and the two tubes are rigidly connected together at their lower ends. The differential expansion of the two tubes is found to be in direct relation to the thermal input of the gas being burned. If the temperature of the room changes, both tubes respond to an equal extent, so that no relative motion occurs as a result of changes in this temperature. The upper end of the outer tube is fixed to the instrument case, while the upper end of the inner tube is fixed to the magnifying mechanism. This mechanism incorporates two frictionless crossed spring pivots. A zero adjusting knob is provided.

Chart Table and Clock

The chart table is readily removable from the instrument as a complete unit. It incorporates an automatic rewinding mechanism. The chart is 4 in. wide and is driven at the rates of ¼ in., ½ in., or 1 in. per hour, as required. Normally it runs for a month. The positive type of drive, together with a high grade clock fitted with a fully jewelled escapement and of ample power, ensures accurate time register of the chart over long periods. The clock is designed to give reliable service under the adverse conditions which are likely to be encountered in practice. If the spring-wound type of clock is used, the gas under test is the only external supply required. An electric synchronous clock can be fitted, in which event a 50-cycle, single-phase alternating current is necessary—*Sigma Instrument Co., Ltd., Letchworth, Herts.*

Car Radiator Makers Use Gas

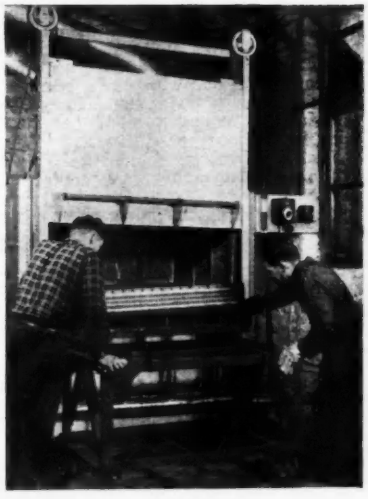
Manufacture of motor car radiators is fast becoming an important branch of the engineering industry, and at the works of Chiantor Ltd., of Holland Park, London, who specialise in this work, the North Thames Gas Board have recently installed a gas plant which is being used in the manufacture of these important components.

Specially constructed, the plant is used for soldering the seams of cooling tubes in the radiators, and for soldering cooling fins to the tubes.

The plant is externally heated and lined internally with firebricks, a method of construction not normally used with the comparatively low operating temperature of 350°F. required in this process. Firebrick lining was adopted in place of steel inner construction as with the latter, deterioration would be extremely rapid due to the action of acid fumes from the fluxing solution.

Consisting of a number of small oval tubes fitted with fins or gills, the cooling elements are assembled into a complete unit. The flat brass strip, from which are made the oval tubes, is supplied by the manufacturers in a coil. This is unwound, passed through a degreasing tank, and then through a gas-heated tinning bath. The tinned strip is next passed into a tube-forming machine and cut to the requisite lengths. The fins are now assembled by hand into jigs, and the tubes fitted to them. Tube header plates, used for fixing the tanks, are then fitted, and the whole assembly immersed in a bath of fluxing solution. It then passes into the specially constructed gas plant where it is heated to the critical temperature to allow the solder to run and so seal the tube seams and secure the fins.

This process represents a considerable saving in solder, as the previous method was to dip the assembly in a bath of molten solder. Time taken in the furnace



The radiator block for a bulldozer is seen here entering the furnace.

varies from three minutes for ordinary car radiators, to seven minutes for the largest type handled—the radiator block for a Bulldozer.

Second prize in the class for advertising tableaux at Teignmouth Carnival on Thursday, August 19, when a one-and-a-half miles long procession was watched by 30,000 people, went to the South Western Gas Board for a tableau depicting fuel through the ages.

How Automatic Can We Get?

Mr. Henry F. Dever, President of the Brown Instruments Division of Minneapolis - Honeywell Regulator Co., in a talk to the Boston Society of Security Analysts poses this question: 'How automatic can we get?'

'The full potentialities of automatic control in industry, or industrial instrumentation,' he said, 'will not be reached as long as we think only in terms of putting controls on individual industrial machines, or even of putting several such machines embodying controls into factories. The entire factory—even the entire process of manufacture from field or mine to consumer—must be engineered for control. Our aim in automation is the greatest satisfaction from the least expenditure of human effort. At the target end of our outlook is something which we rather loosely call the automatic factory.'

Mr. Dever went on: 'How much automation have we accomplished already in comparison with what there is yet ahead of us? I know of no authoritative statistics that can tell us very accurately what part of our instrumentation potential has been reached. But as I see it, we are only nicely started. We may be in the neighbourhood of 10 to 20% along the way.'

Of the aim of his branch of industry, Mr. Dever said that while they had a host of automatic devices for regulating the more obvious variables of the manufacturing processes—temperature, pressure, flow—he believed that they would more and more control from the characteristics of the product. 'We call this product quality determination. With all the variations in quality between different products, the need of further work between the manufacturers of instruments and users is implied. Undoubtedly there will also be a widespread need for new means of sensing and controlling qualities.'

Dealing with the costs of instrumentation, Mr. Dever said that spread over all industry they would be no more than 6% of total process equipment costs. Balance against this was the increase in output. 'Automation reduces the amount of goods in process in a plant,' he contended, 'It makes it possible to schedule more accurately the inventories necessary to keep the plant running. Actually, it is quite possible, comparing many factories today with the factories turning out equivalent work with proved control methods, to say that instrumentation would "cost nothing at all." The cost of controls would be offset by contraction of inventories and stocks of goods in process. And while we are commenting on possibilities, let's not overlook that cost accounting may some day be done automatically with the actual manufacture.'

About those who had foreboding about the trend towards automation, 'thinking perhaps that it will obsolete the human being,' Mr. Dever said that they must remember that the worker himself, even when he was called unskilled, was a magnificently sensitive and adaptable machine. He performed sensing. safety and other operations which it was often difficult and expensive to do automatically. 'For example, when the Atomic Energy Commission set out to devise a machine to uncork a bottle, pour out some of the contents, recork the bottle and replace it on its shelf, it faced an expenditure of many hundreds of thousands of dollars and hours of design time.' While this example was a simple one, it served to illustrate the point.

Concluding with the exhortation—'top management must become "automatic-minded" now'—Mr. Dever said, 'Let us remember that in the final analysis system engineering is just the latest in the long train of human efforts, which began with the invention of the wheel, to substitute animal or elemental power for human muscle. It is perhaps true that because of the amazing acceleration of technical progress we are the first generation of those who can see what tomorrow can be like.'

What the Consumer Reads

The Hulton Readership Survey for 1954—its eighth consecutive year—follows in conception and purpose the pattern of previous years. Introducing the survey, Hulton Research mention the difficulties inherent in the definition of the term 'readership,' for long apparent to those concerned with media research. The definition of readership adopted by the Hulton Survey in 1947 has been adhered to throughout the series. Thus the tables of this year's report show the proportions and numbers of people who say they have read (in the broadest sense) a particular daily newspaper on an average week-day, a particular Sunday newspaper on an average Sunday, a particular weekly magazine in any one week and, finally, a particular monthly magazine in a period of four weeks. It was not essential that the informant should have read the current issue.

While no limits were placed on the number of newspapers covered, definite limits were called for among magazines. This was because, in the case of magazines, a list was shown to the informant at the time of asking the questions. This list excluded magazines published by the sporting press, the trade technical and 'hobby' press and magazines published less frequently than at monthly intervals. Specific enquiry on weekly and monthly magazines was therefore confined to 70 publications.

Section 3 of the survey analyses the reading habits of the public from a goods and services point of view. For example, gas-users and television audiences.

A table showing the reading habits of housewives using gas begins with readers of the *News of the World*. Out of an estimated population of gas-using housewives of all classes of 11,700,000, 50% read this paper. This figure is based on a census taken with 4,119 informants and represents the highest readership of any of the publications involved. The table gives a clear indication of how the readership is divided into class-groups.

Commenting on the reading habits of gas and electricity users, the Hulton Research says the demand for these commodities and for gas and electrical appliances is one which arises from the household as a unit rather than from any individual member of it, but reading habits must be related to individuals and cannot satisfactorily be assessed for whole families.

Gas appliances, being mainly of a purely domestic nature, are primarily the concern of the housewife, though she may need her husband's consent for major purchases. This is equally true of a proportion of electrical appliances, but in this field there are also large numbers of items which are more specifically the concern of the householder. Therefore, the table which relates to gas covers only housewives; the table relating to electricity gives figures for both housewives and householders.

For the most part housewives and householders shown in the readership tables represent the joint heads of homes. There are, however, a large number of households which have no male head and a smaller number with no housewife, one person households comprising a large proportion of these.

A sub-table giving the estimated proportions of households in each class having gas or electricity installed shows a continuation of the trends noted in the 1953 report—no change in the proportion of households with gas, an increase in the proportion with electricity and a further decline in the proportion with neither.

Three College Syllabuses

Three colleges have published details of their evening and full and part time day courses in technical subjects.

The first, Sir John Cass College, Jewry Street, Aldgate, London, E.C.3, features among other subjects first and second year courses in domestic and industrial fuel. These courses comprise lectures by a number of specialists from the different fuel industries. The text book recommended for reading in conjunction with the lectures is 'Coal—Production, Distribution and Utilisation' published for the Coal Industry Society and the Institute of Fuel.

For gas engineering classes at Westminster Technical College, the laboratory facilities have been greatly improved for the forthcoming session. The building extensions affecting this laboratory have been completed and it is being re-organised and fitted with modern gas appliances so as to provide facilities for the testing of all types of appliance and ancillary components to the relevant British Standard Specifications. The classes have been set out into four groups according to the education regulations with which they comply. The first scheme relates to the requirements for the Associate Membership Examination of the I.G.E.; the second is for the Higher National Certificate Course in Civil Engineering (Gas); the third is a City and Guilds of London Institute course and finally there is an I.G.E. certificate course in gas salesmanship and consumer service.

Wandsworth Technical College is to run evening classes in preparation for the examination of the City and Guilds of London Institute in gas fitting and also part-time day classes in gas fitting. For women there are afternoon and evening classes in cookery, including for the City and Guilds examination.

The new MAIN GG 222 griller and toaster

....the fastest and most economical appliance of its kind

The GG 222 is heated by an entirely new enclosed flame unit, which heats rapidly and gives fast, even cooking over an area of 350 sq. ins. The gas consumption is automatically reduced by 20% in 20 minutes without affecting the useful heat output. The high thermal efficiency of the unit ensures *economy*. The grill is fired by silent, non-lighting-back neat gas jets, giving *convenience and control*.

The griller is strongly constructed of cast iron, with heat-conserving insulation between the outer casing and interior lining.

It is available with or without the stand shown in the illustration. Overall size is 28" wide x 23½" high x 26" deep and the grill opening is 24" wide x 9" high x 19½" deep. The stand is 34" high.

Vitreous enamel finish—available in dapple grey as illustrated or in cream with black interior.

THE No. 222
MOUNTED ON STAND

* *Some features of the GG222*

Patented high efficiency neat gas unit—non-lighting-back—silent and completely controlled • insulated and air-cooled body—ensuring low surface temperatures • gas supply automatically reduced—economy in gas consumption achieved • cool-type burner control taps • large working area provided • one half of grill can be used if desired • fat runs to collection trough in front • fully vitreous enamelled surfaces

our "Planned Kitchencraft" Department is at your service

If you have a catering problem consult R. & A. Main Limited. Our organisation, backed by years of experience in planning and equipping kitchens of all sizes, will gladly work with you in developing your own ideas or submit plans for your kitchen.

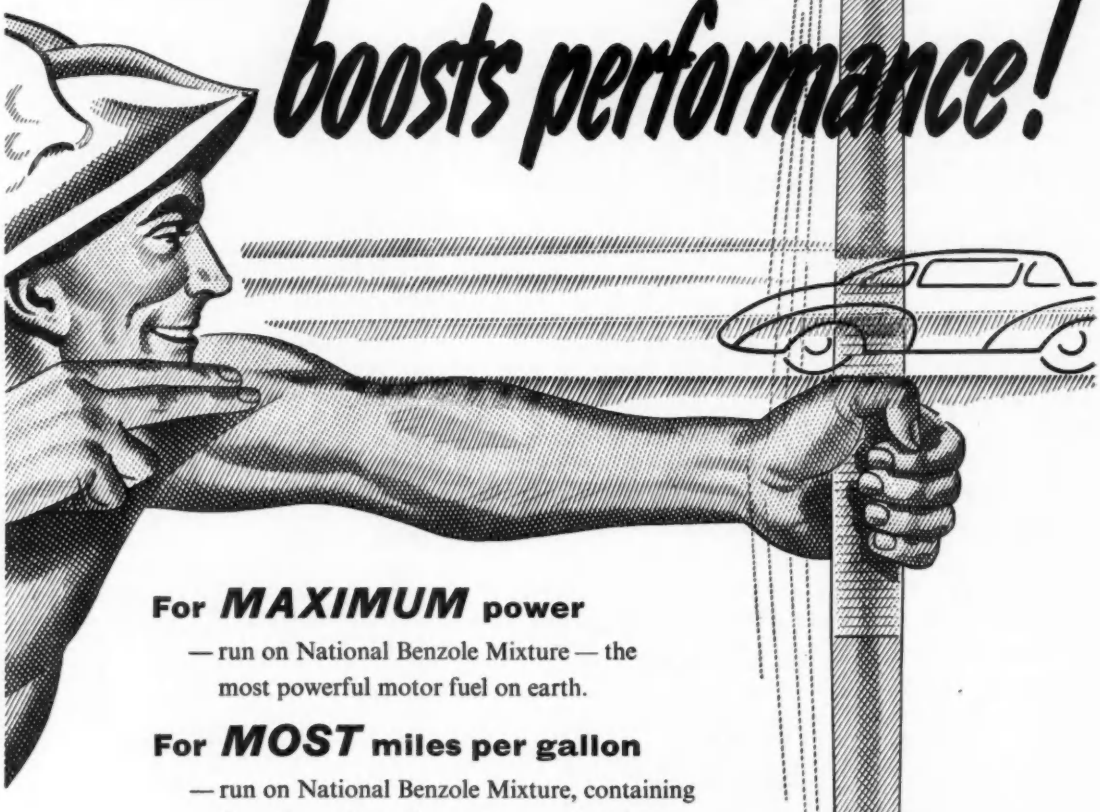
OP7

GAS AND STEAM
COOKING and SERVICE EQUIPMENT

STEAMERS BOILING PANS GAS RANGES
HOT CLOSETS ROASTING OVENS FISH FRYERS

R. & A. MAIN LTD., LONDON and FALKIRK

BENZOLE boosts performance!



For *MAXIMUM* power
— run on National Benzole Mixture — the most powerful motor fuel on earth.

For *MOST* miles per gallon
— run on National Benzole Mixture, containing Benzole — Nature's most economical fuel.

For *BEST* possible smoothness
— run on National Benzole Mixture — for Benzole is the world's best anti-knock spirit.

WINGS DAY SEPT 16th Give for those who Gave

TRY IT TODAY!

The very first gallon will prove it!

NB9RQ

NATIONAL BENZOLE MIXTURE

National Benzole Company Limited, Wellington House, Buckingham Gate, London, S.W.1 (The distributing organisation owned and entirely controlled by the producers of British Benzole)

Mr. Butler Relaxes Finance Controls

Mr. Butler has relaxed his rigid ban on the raising of new capital by hire-purchase firms. In a letter to the Capital Issues Committee, which considers all applications, he says that current circumstances do not seem appropriate to operate the control.

The Chancellor asks the Committee to treat requests from companies wishing to raise more capital to finance the growth of hire-purchase business on their merits having regard to the purposes for which the money is needed. Consent to issues likely to lead to an excessive expansion in consumer credit must be avoided.

On July 13 the Board of Trade removed hire-purchase restrictions which provided for minimum deposits and limited repayment periods. As a result many firms have sought to raise capital to finance the additional credit sales.

Coleraine Demand For Cheaper Gas

When a request from the local Trades Council that Coleraine Borough Council should receive a deputation to discuss the possibility of reducing the price of gas came before the latter body, it was decided to reply that the request would be considered after the trading accounts for the last financial year had been received and considered by the Borough Council.

The Gas Manager (Mr. W. R. Armstrong) reported that an award of 1½d. per hour made to various trades would increase the annual wage bill of the gasworks by a further £72 per annum. This increase, together with increases in the cost of coal freight and other wages since the beginning of the last financial year, would mean an increased annual expenditure of about £2,072.

Coal Shortage at Bangor Gasworks

Reporting to Bangor (Co. Down) Borough Council, the Gas Manager and Engineer, Mr. J. A. Derbyshire, referred to the 'very serious coal position' and a general shortage everywhere. He stated that at the beginning of August the stock of coal at the local gas works amounted to 300 tons—sufficient for seven days gas-making, compared with 1,611 tons at the same time last year.

Mr. Derbyshire's report, which was adopted, stated that during July the coal position in general was very serious, and there was a general shortage everywhere. A total of 1,339 tons of coal was carbonised during the month. The Manager, who said he was apprehensive about the coal position, read a letter from the Ministry of Commerce, emphasising that unless coal stocks were built up there was a risk of interruption of industrial production throughout the province this winter.

Mr. Derbyshire also reported that the sales of gas appliances during the month of July totalling £2,049 was a record for the undertaking. Of this figure £586 (28%) were cash sales. The sales represented an increase of £822 during the last four months compared with the corresponding period last year.

NORTH EASTERN SPORTS AND GALA

The North Eastern Gas Board held their first annual sports day and gala at Leeds University sports ground on August 7. Despite a heavy thunderstorm which interrupted the events for about an hour, it was possible to complete the programme.

Three thousand people saw the Hull Group win the inter-group competition. The York/Harrogate Group were runnners-up.

First half of the afternoon was devoted to children's events. In addition to the field events there were attractions for the children—a miniature railway, swings and roundabouts, and a Punch and Judy show.

Dr. R. S. Edwards, Chairman of the Board, and Mr. G. E. Currier, O.B.E., Deputy Chairman, look on while Mrs. Edwards prepares to receive the prize-winners.

Gasworks Closed Down

Gas production has ceased at the gasworks at Sowerby Bridge, near Halifax, after 120 years, and the district hitherto served by the works is now being supplied with gas through the West Yorkshire grid system of the North-Eastern Gas Board from the Tingley works at Morley. About 30 of the works personnel are affected by the change-over and are being offered alternative employment by the Board. The holders at Sowerby Bridge will still be used for gas storage.

Chicken and Turkey

The Scottish Gas Board made good use of the Tenth World Poultry Congress in Edinburgh from August 14, to urge the claims of gas throughout the poultry world.

In the 'Chicken Comes to Town' exhibition in the Waverley Market the scope for use of gas was demonstrated to poultry experts from most of the world's countries—but most of all to home poultry men and women. The gas display was based on the theme 'Chicken in the Kitchen.' And in the display of processed and cooked turkey, staged by the British Turkey Federation, the various refrigerated items bore a little card—sporting Mr. Therm—with the words 'Cooked to perfection by gas.'

Meals on Television

The Scottish Gas Board moved the necessary equipment into the clubhouse at Queen's Park Bowling Club on August 5 for a television relay at Glasgow. Mrs. Charles Stewart, who has been married for less than two years, demonstrated the art of Scots cooking. Her kitchen experience does not date from the time she moved into her home to start cooking for her husband. As Miss Mary MacAuley, school meals superviser for Glasgow, she was responsible for the preparation of 70,000 dishes a day until her retirement in November, 1952.

Apart from this being her television debut, it was a new experience for Mrs. Stewart on another score. It was the first time she had cooked in a bowling clubhouse, which was taken over for the day for the 'About the House' feature.

U.S. Coal Imported

The first direct shipment of coal from America to Britain since the winter of 1951-52 has arrived in the Mersey. It is ten thousand tons of American coal for use on Merseyside, and at Manchester. The shipment is mainly large coal suitable for domestic use.

A spokesman for the National Coal Board said that he did not yet know the price of the coal, but imagined that it would be sold to the domestic consumer at the normal price, as it was not the policy of the Coal Board to pass on freight charges.

This shipment will be followed by others direct from America in the next four months, and American coal will also be carried to London from Amsterdam.

Newport Flower Show

Presiding at the annual vegetable and flower show at the Crindau works of the Newport undertakings, Mr. J. F. Rust, General Manager and Engineer, Newport, referred to the illness of Mr. George Day, Chief Clerk, who for many years had been responsible for the organisation of the show. A letter was sent to Mr. Day wishing him a speedy recovery.

Mr. A. H. Dyer, Deputy General Manager and Engineer, read the reports of the judge, which commented on the high standard of most of the allotments and gardens and the excellence of the exhibits in the vegetable and flower classes despite recent weather conditions.

Mrs. K. M. Rust presented the prizes, among which was a silver rose bowl donated as a perpetual challenge trophy by herself and her husband.

Present at the show were Mr. R. S. Snelling, Deputy Chairman of the Board, Mr. C. B. Mawer, Secretary, Mr. W. E. Crowley, Industrial Relations Officer, Mr. R. Wilson Bartlett, former Chairman of the Newport undertaking, Mr. R. J. Auckland, former director, and other officers from the undertakings.

Bangor Borough Council has decided to apply to the Ministry of Health and Local Government for a loan of £5,500, the amount required for the provision of new gas mains and feeder mains in connection with a housing scheme being carried out by the Northern Ireland Housing Trust.

Diary

Sept. 1.—SOUTHERN G.C.C.: Reading, 2.30 p.m.

Sept. 7.—SOUTH EASTERN G.C.C.: Hotel Metropole, Brighton, 11 a.m.

Sept. 7.—EAST MIDLANDS G.C.C.: Victoria Station Hotel, Nottingham, 11.30 a.m.

Sept. 7-18.—BRITISH FOOD FAIR. Olympia. Gas Council exhibit.

Sept. 8.—SOUTH WESTERN G.C.C.: 34, Bridge Street, Taunton. 11 a.m.

Sept. 8.—THE NATIONAL BENZOLE ASSOCIATION.—Annual General Meeting, Wellington House, Buckingham Gate, London, S.W.1. 12.15 p.m.

Sept. 9.—NORTHERN JUNIORS: Visit to Darlington Forge Works. 2.15 p.m.

Sept. 10.—SCOTTISH (WESTERN) JUNIORS: Presidential Address, G. Royden (Tradeston); Gas Showrooms, Sauchiehall Street, Glasgow, 6 p.m.

Sept. 14.—INSTITUTION OF HEATING AND VENTILATING ENGINEERS: 'Current American Practice in Heating, Ventilating, and Air Conditioning,' John K. M. Pryke; at the Institution of Mechanical Engineers, 1, Birdcage Walk, S.W.1., 6 p.m.

Sept. 14-17.—ASSOCIATION OF PUBLIC LIGHTING ENGINEERS. Annual Conference and Exhibition of Street Lighting Apparatus and Equipment. Eastbourne.

Sept. 16.—SCOTTISH ASSOCIATION OF GAS MANAGERS: Annual General Meeting, Cowdray Hall, Aberdeen; Golf and Bowling Competitions on Sept. 15; Annual Outing on Sept. 17.

Sept. 20.—WEST MIDLANDS G.C.C.: Gas Offices, Birmingham. 2.15 p.m.

Sept. 20.—EASTERN G.C.C.: Connaught Rooms, Kingsway, W.C.2. 2 p.m.

Sept 22.—MANCHESTER AND YORKSHIRE JUNIORS: Joint Visit to Tingley Gasworks.

Sept. 22.—WALES AND MONMOUTHSHIRE SECTION, I.G.E.: Annual General Meeting, Swansea.

Sept. 22-23.—IRISH GAS ASSOCIATION. Annual Meeting. Bundoran, Co. Donegal. Presidential Address, R. F. Pollock (Enniskillen); 'Gas Manufacture by the Tully Process,' J. E. Tully; 'Gasification Plant Developments,' N. J. Robertson.

Sept. 23.—EAST MIDLANDS GAS BOARD SALES AND SERVICE CIRCLE, Notts. and Derby Division, Annual General Meeting. Nottingham. Speaker: W. Burnstone, Chief Assistant Solicitor, Area Headquarters, on 'Legal Aspects.'

Oct. 1.—SCOTTISH (WESTERN) JUNIORS: Jubilee Dinner, Burlington House, Bath Street, Glasgow, 6.45 p.m.

Oct. 5.—INSTITUTION OF GAS ENGINEERS: Murdoch Memorial Lecture, Dr. Alexander Fleck (Chairman, I.C.I., Ltd.), at Royal Institution, 6 p.m. Admission by ticket only.

Saving Coal by Superheat

'Steam is a vehicle for the carriage of heat, just as much as the truck which brings coal into a factory boiler-house. It is, in fact, a form of heat package, with great mobility and readiness for immediate use at any desired location. The heat content of this package can be increased in two ways—by increasing the pressure and temperature of evaporation or by adding more heat to it after the steam has left the boiler.' That is a passage from a new booklet published by Bolton's Superheater and Pipe Works, Ltd., which in non-technical language pinpoints the merits of superheating. The firm has been accumulating experience in the design, construction, and operation of superheaters since 1898. This experience forms the background of the present booklet, in which it is claimed that by the use of Bolton-Gray superheaters coal bills can be cut from 10% to 15% and water consumption by as much as 25%. And 'the worse the plant to which they are fitted, the better are the results.' The booklet explains why the 'Bolton-Gray' superheater reduces maintenance costs. The form of element joint adopted, it is stated, results in steam-tightness at high pressures and temperatures. The joints are protected by finger-plates from the high temperature gases, and the independent connections to the saturated steam headers prevent joint distortions occasioned by temperature differential effects. The superheater as a whole is so held by cast iron supports that all uneven strains on the element and header joints are damped out. Complete dismantling and re-erection of the superheater can be carried out in a few hours, and no special tools or lifting appliances are necessary. The booklet deals in turn with the effect of superheat on boilers, reciprocating engines and turbines, and process vessels and pipelines; and it sets out in detail the advantages to be gained by the installation of 'Bolton-Gray' equipment. We are informed that the publication is available free of charge to steam users on application to Stockport.

Company News

CORK GAS

The Directors of the Cork Gas Consumers' Company have declared an interim dividend at the rate of 3½% for the year ending December 31, 1954, payable on September 3.

SIMON-CARVES

Trading profits of Simon-Carves, Ltd., after adjustment of special provision for retention balances on completed contracts, amounted to £616,112 for 1953, compared with £760,695 for the previous twelve months. The net taxed balance is lower by £115,422 at £163,784, against which the cost of the year's 20% dividend, comprising interim 12½% and a recommended final of 7½%, is £51,899 compared with the £45,554 taken by the previous year's similar rate. Of the 1952 carry-forward a sum of £43,385 has been capitalised. Current liabilities figure at £4,433,624, compared with £4,030,504. Advance payments on contracts are included at £1,366,651 and the previous overdraft of £136,015 has been eliminated.

GEORGE SCOTT

Mr. H. D. MacMurray, of George Scott & Son (London), Ltd., has returned to England after two years residence in Canada, where he has been representing his firm's interests since the formation of a Canadian subsidiary company with W. S. Barron & Son, Ltd., of Gloucester. This subsidiary Company, working in conjunction with Dominion Wheel & Foundries of Toronto, on the design and manufacture, in Canada, of the plant of the two British companies, is now making satisfactory progress in what Mr. MacMurray reports as an attractive but by no means easy market. They are manufacturing some equipment in Canada, but the greater volume has been exported from this country, amounting, in the past 18 months, to over ten times the initial dollar capital outlay. The parent Company of George Scott & Son (London), Ltd., is Henry Balfour & Company, Ltd., of Leven.

BOMBAY GAS

A dividend of 12½%, tax free, has been declared by the Bombay Gas Co., Ltd., for the year 1953. This compares favourably with the previous year's dividend of 7½%. Revenue, etc., before tax, was £83,602, as against £72,818.

FALK, STADELMANN

The directors of Falk, Stadelmann and Co., Ltd., have declared an interim dividend of 10% on the ordinary share capital of the Company in respect of the year ended March 31, 1954, payable, less income tax, on August 21, last. This is the same dividend as in the previous year.

UNITED GAS

Following the reduction in the interim from 5% to 3¾% the directors of United Gas Industries now announce a 4¼% cut to 7½% in the final recommendation, so that the total distribution on the £778,699 ordinary capital at 11¼% is 5¼ points lower than the 17% payment maintained for the previous seven years. On the £27,296 deferred capital, a dividend of 4.28d. per 1s. share is to be paid, compared with 2s. for 1952-53. The preliminary statement shows group profits for the year ended March 31 last, virtually unchanged at £183,577 against £182,695. This is arrived at after charging nearly £100,000 less at £158,708 for taxation, crediting £7,185 in respect of adjustments of previous year's tax, and bringing in £82,063 provisions no longer required. Adding back the tax charge and deducting the other credits gives a figure of £253,037, compared with £425,671—a drop of £172,634. No explanation accompanies the announcement, but when the lower interim was announced in January last the Chairman, Lieut.-Colonel W. C. Smith, spoke of a recession in trade and higher costs, adding that reduced margins on a lower volume of sales were having an adverse effect on profits. He was, however, confident that the Company could weather this recession. The much larger amount of £75,000 against £40,000 is this time placed to reserve, and the carry forward becomes £583,258 as against £562,801.

PUBLISHERS' NOTICE

The " Gas Journal " is published every Wednesday, price 1/3d.; by post 1/5d.

Subscription Rates: Home and Empire:—52/- per annum; Foreign:—60/- per annum. (Both payable in advance.) A copy of the " Gas Journal " Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 1/9 per line (approx. 7 words)—minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep × 7" wide; block screen 120.

BUSINESS MANAGER : S. T. CULLEN

MIDLANDS MANAGER: G. B. Torrance, 42, Wychall Lane, King's Norton, Birmingham, 30. Telephone: Kings Norton 3868

NORTHERN MANAGER: Philip W. B. King, address for present c/o 11, Bolt Court.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: CENtral 2236-7. *Telegrams:* Gasking, Fleet, London.

OXIDE

DUTCH AND DANISH BOG ORE
SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright.
Highest prices paid for Spent Oxide.

Send your enquiries to

GAS PURIFICATION & CHEMICAL COMPANY LIMITED
ESTABLISHED 1873

PALMERSTON HOUSE, BISHOPSGATE, LONDON, E.C.2.

Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

IT'S NEW!
CHLORO-FLASH BY
NU-SWIFT!

EXTRA-RAPID for EXTRA-HAZARDOUS FIRE RISKS : Chlorobromomethane, science's new wonder chemical in pressurized charges. Approved by F.O.C. You've never seen anything like it!

NU-SWIFT LTD · ELLAND · YORKS
In Every Ship of the Royal Navy

"KLEENOFF" *
THE COOKER CLEANER
"KLEENOFF"
FIBRE BRUSHES
RUBBER MOPS
"KAY-DEE" *
KETTLE DESCALER

For resale to the public, and in bulk for Works use.

BALE & CHURCH, LTD.
7, CROMPTON WAY, CRAWLEY, SUSSEX

BUFFALO EJECTOR

For pumping water or other liquids.
Send for List:—
GREEN & BOULDING, LTD.
162a Dalston Lane, London, E.8

APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

WALES GAS BOARD

ABERTILLERY UNDERTAKING

APPOINTMENT OF WORKS SUPERINTENDENT

APPLICATIONS are invited from suitably qualified persons, preferably with Intermittent Vertical experience, for the above appointment, for which the salary will be within Grade V, A.P.T., Provincial 'A' (£480/£560 per annum).

A house will be made available, rent and rates-free, in addition to which a heating and lighting allowance of £15 per annum will be paid.

The successful applicant will be required to pass a medical examination and to subscribe to the Board's Superannuation Scheme.

Applications, stating age, qualifications and experience, together with the names of two referees, should reach the undersigned not later than September 13, 1954.

D. S. DAVIES,
Engineer and Manager.

Gas Offices,
Old Aberbeeg Road,
Abertillery, Mon.

WALES GAS BOARD

COLWYN BAY GROUP
HOME SERVICE ADVISER—SENIOR—NORTH WALES

APPLICATIONS are invited for the above appointment. The salary will be within Grade A.P.T. VI (Provincial 'A') (£408/472). Candidates should hold the diploma for Domestic Science or Institutional Management and have good experience and organising ability on all Home Service activities.

The successful applicant will be required to pass a medical examination and participate in the Board's Superannuation Scheme.

Applications giving details of experience, age, education, together with the names of two referees should be addressed to the undersigned and received not later than two weeks after the appearance of this notice.

H. BLYTHE,
Group Chairman.

Gas Offices,
Colwyn Bay.

WALES GAS BOARD

APPLICATIONS are invited for the post of GOVERNOR MAINTENANCE FITTER for the South Wales Gas Grid.

The duties will comprise the repair and maintenance of volumetric governors and control gear, holder control valves and control equipment, and grid district governors, also the supervision of the installation of future governor installations and for the maintenance of grid meters at holder stations.

The work will be located generally in the Eastern Section of the South Wales Gas Grid within the area from Newport to the Rhondda.

Applicants should have had previous experience in the installation and maintenance of high pressure governor installations.

Transport will be available and the successful candidate will receive training at the Governor Manufacturers' Works prior to commencing his duties.

The rate to be paid will be 3s. 9½d. per hour for a normal 44-hour week. The successful applicant will be required to pass a medical examination.

Applications stating age, training and experience to be received by the undersigned on or before Sept. 10, 1954.

T. S. RICKETS,
Grid Manager.

Grid Control Offices,
Technical Headquarters,
Grangetown, Cardiff.

SOUTH EASTERN GAS BOARD

DRAUGHTSMAN,

SPECIAL SERVICE DEPARTMENT,
709, OLD KENT ROAD, S.E.15

APPLICATIONS are invited for the above position.

Preference will be given to applicants who have knowledge and experience of the design and construction of industrial and commercial gas equipment.

Salary within the range £540-£620 per annum.

Applications in writing, quoting reference V10/411 and giving full details, should reach the undersigned within fourteen days.

R. J. MCCRAE,
Personnel Manager.

Katharine Street,
Croydon.

NORTH WESTERN GAS BOARD

CENTRAL LANCASHIRE GROUP
SENIOR HOME SERVICE ADVISER

APPLICATIONS are invited for the above pensionable appointment at a salary within Grade A.P.T. IX (female) (£508-£588 per annum). The duties will involve responsibility for organising the activities of the Home Service Section and co-ordinating the work of the Home Service Advisers throughout the Group.

Practical experience and possession of a recognised full-time diploma in housecraft subjects are essential, and candidates must be capable of demonstrating and promoting the use of gas appliances, and advising consumers on kitchen and other domestic problems involving the use of gas.

Detailed applications, giving the names of two referees, should reach the General Manager, North Western Gas Board (Central Lancashire Group), Gas Works, Dane Street, Rochdale, within fourteen days.

(*Classified advertisements continued on page* 542)

APPOINTMENTS VACANT (ctd.)

ENGINEERING DRAUGHTSMAN required by Company in the North West manufacturing domestic gas appliances. Must be capable of taking control of Drawing Office and Experimental Shop. Knowledge of press tools and welded construction suitable for vitreous enamelling essential. Previous experience in designing domestic gas appliances desirable. Position calls for initiative and drive. Good prospects for the right man. Write in confidence stating age, training, experience and salary required. Apply: No. 213, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

NORTH EASTERN GAS BOARD

HEAD OFFICE

ELECTRICAL SUPERVISOR

APPLICATIONS are invited for the above position, the commencing salary of which will be within Grade A.P.T.XII of the National Salary Scales (£765-£890). The point of entry to be determined by qualifications and experience.

The successful candidate will be required to supervise the installation of electrical equipment and be responsible for the standard of electrical maintenance on the various works of the Board. Preference will be given to candidates of Higher National Certificate standard with a wide experience of electrical installations in large works or factories. Design ability is not essential, but a good knowledge of wiring diagrams and circuit testing, together with extensive workshop experience, is necessary.

The successful candidate will be required to pass a medical examination and to participate in the Board's Staff Pension Scheme.

Forms of application may be obtained from the Chief Engineer at the address below, and should be returned to him, together with the names of two referees, not later than September 18, 1954.

J. C. GARDNER,
Secretary.

Bridge Street,
Leeds, 2.
August 24, 1954.

EAST MIDLANDS GAS BOARD

LEICESTER AND NORTHANTS DIVISION

DIVISIONAL TRANSPORT OFFICER

APPLICATIONS are invited for the position of TRANSPORT OFFICER to the Leicester and Northants Division. The salary, which at its commencement will be dependent upon the qualifications and experience of the successful applicant, will rise to a maximum of £890 per annum.

The Divisional Transport Officer will be responsible for the co-ordination, maintenance and replacement of transport attaching to all Undertakings in Leicestershire and Rutland and, through the Group Managers, in Northamptonshire. He will also have direct operational control of the transport and transport staff of the Leicester Undertaking.

Applicants must have had practical experience in the maintenance of vehicles and mobile plant, and responsibility for the operation of a fleet of vehicles.

The post is pensionable, and the successful candidate may be required to pass a medical examination.

Applications stating age, qualifications, present position and experience, together with the names of two referees, should reach the undersigned not later than Saturday, September 4, 1954.

H. B. TAYLOR
Divisional General Manager.

Millstone Lane,
Leicester.
August 20, 1954.

SCOTTISH GAS BOARD

DUMBARTON/HELENSBURGH DISTRICT
WORKS SUPERINTENDENT,
HELENSBURGH

APPLICATIONS are invited from suitably qualified Gas Engineers for the position of WORKS SUPERINTENDENT, Helensburgh. Candidates should preferably have practical experience of the control and operation of Glover-West Vertical Retorts and automatic C.W.G. plants and be capable of supervising the general operation of the Works, which produces 260 million cubic feet of Gas per annum.

The salary will be within Grade VI (£510-£590 per annum) of the National Salary Scales for Gas Staffs.

A new Bungalow, situated in the residential area of Helensburgh, is available at a Rent of £37 per annum.

Applications, stating age and particulars of training, experience and qualifications, should reach the undersigned within ten days of the appearance of this advertisement.

ALEXANDER MCFADYEN,
Engineer and Manager.

Gas Works,
Dumbarton.

SCOTTISH GAS BOARD

GLASGOW DIVISION
GLASGOW DISTRICT
VACANCY—PROVAN GAS WORKS
CHIEF TECHNICAL ASSISTANT

APPLICATIONS are invited from suitably qualified persons for consideration in respect of the above vacancy.

Applicants should have experience in the operation and control of large scale coal carbonisation, carburetted water gas production, all ancillary processes, and will be required to supervise the carrying out of all routine gasworks tests.

The post is graded within Scale A.P.T. XI (Provincial 'A') (£715-£840 per annum) of the National Joint Industrial Council Salary Scales for Gas Staffs, and the successful candidate will require to join the Board's Pension Scheme and may be required to undergo medical examination.

Applications, endorsed TA/Ch., should be in the hands of the undersigned not later than fourteen days after publication of this advertisement.

D. F. YOUNG,
Divisional Controller.

30, John Street,
Glasgow, C.1.

EASTERN GAS BOARD

NORWICH DIVISION
HOME SERVICE ADVISER

APPLICATIONS are invited for the position of HOME SERVICE ADVISER.

Salary range £384-£472 per annum. Commencing salary to be commensurate with the experience and capabilities of the successful candidate.

Candidates should possess a recognised Diploma in Cookery or Domestic Science and be experienced in the practical demonstration of Gas Cooking and other Gas Appliances, and be able to advise consumers on all domestic problems involving the use of gas in the home.

The successful candidate may be required to pass a medical examination and unless already subject to a Pension Scheme by virtue of the Gas (Pension Rights) Regulations, 1950, will be required, if eligible, to join the Board's Staff Pension Scheme within six months from taking up the appointment.

Applications, stating age, experience and present position, giving full particulars of training and qualifications, together with the names of two referees, should reach the undersigned within fourteen days of the appearance of this advertisement.

R. A. WESTON,
General Manager.

Norwich Division,
Eastern Gas Board, Divisional Office,
Thorpe Lodge, 1, Yarmouth Road,
Norwich, Norfolk.

DRAUGHTSMEN required experienced in Gas and Chemical Engineering. Pension Scheme. Five-day week and canteen facilities. Apply: W. C. Holmes and Co., Ltd., Turnbridge, Huddersfield.

FIRST CLASS Agencies wanted sales executive wide experience top qualifications valuable contacts S. England, C.I. Apply: No. 210, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

WEST MIDLANDS GAS BOARD

SHROPSHIRE DIVISION
MAINS AND SERVICE FOREMAN
WELLINGTON GROUP

THE DUTIES include the control of mains and services personnel, and supervision of work, including that of contractors.

The salary will be in accordance with Intermediate Grade VIII (Conditions 2) (£510 × £15—£555 per annum).

A house will be available at a reasonable rental.

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications, stating age, experience, whether married or single, together with the names of two referees, should be addressed to Mr. W. Oldham, Divisional General Manager, West Midlands Gas Board, Sidney House, School Court, Shrewsbury, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

SOUTHERN GAS BOARD

DISTRIBUTION ENGINEER—
PORTSMOUTH, GOSPORT AND
BOGNOR REGIS GAS UNDERTAKING

APPLICATIONS are invited from qualified engineers for the position of DISTRIBUTION ENGINEER of the Portsmouth, Gosport and Bognor Regis Gas Undertaking at a commencing salary of £1,000 per annum.

Applicants must be Corporate Members of the Institution of Gas Engineers and hold a Higher Grade Certificate in Gas Engineering (Supply). The person appointed will be responsible for the laying of mains and services (high and low pressure) serving approximately 120,000 consumers, and for the control and maintenance of district gasholders, compressing plant, etc.

The successful candidate will be required to pass a medical examination and, unless already subject to a pension scheme by virtue of the Gas (Pension Rights) Regulations, 1950, will be required to join the Board's Staff Pension Scheme.

Applications stating age, education, qualifications, training, experience and present salary, together with a one-page summary of these particulars, should be sent in an envelope marked "Distribution Engineer" to the Secretary, Southern Gas Board, 164, Above Bar, Southampton, to reach him not later than September 18, 1954.

MISCELLANEOUS

SMALL single truckloads and larger quantities of good ROUGH BREEZE from any gasworks, large or small, in the United Kingdom required by merchants paying own railway tolls. Cash price and particulars to: No. 9378, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

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A SPEEDY SERVICE

TOP PRICES PAID

Collection arranged from anywhere in U.K. Truck Loads to our own private siding.

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Sell to those best suited to deal with them

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MAXIMUM STABILITY

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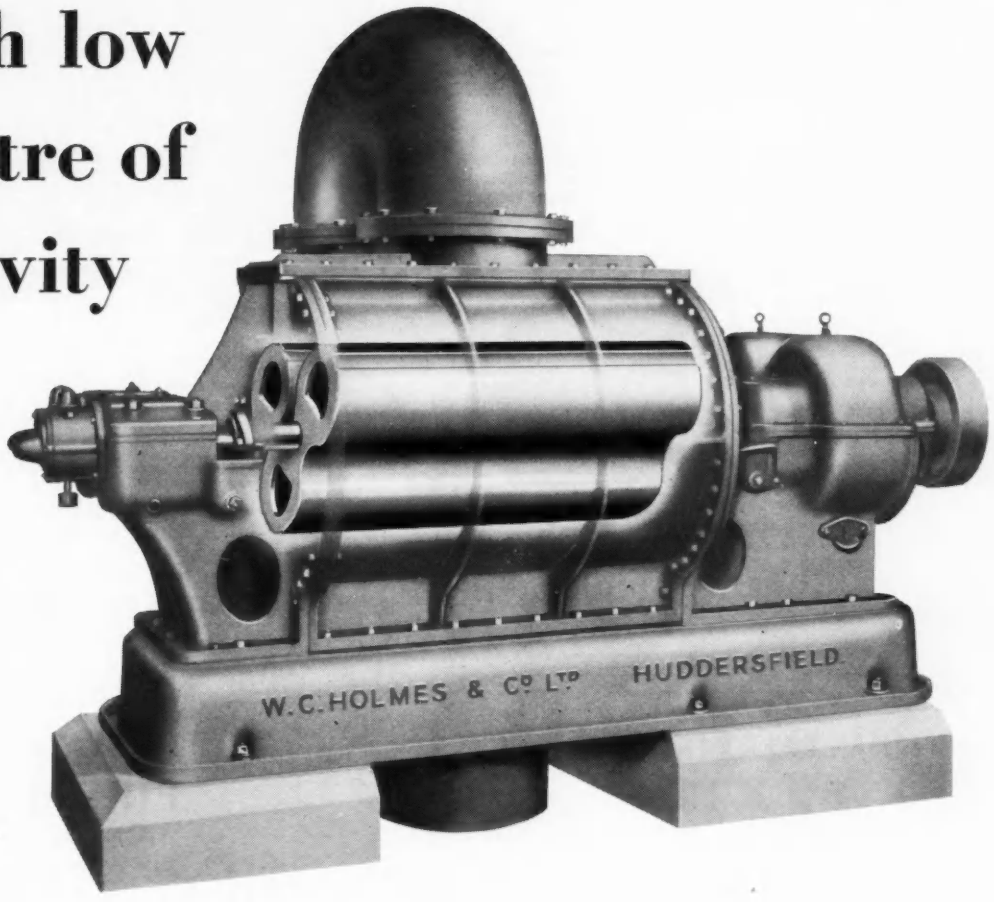
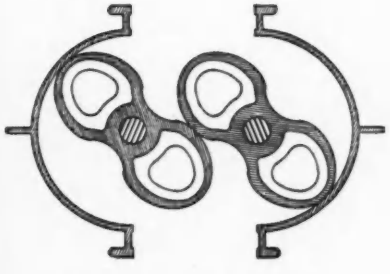


maximum stability



and efficiency are assured in the re-designed Holmes-Connersville exhauster. The upward gas delivery results in the downward thrust being carried the shortest distance to the bedplate. The gas inlet is conveniently arranged under the machine with outlet on top permitting easy internal inspection.

HOLMES-CONNERSVILLE EXHAUSTERS AND BOOSTERS

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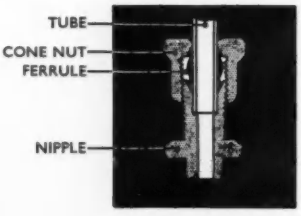
FOR COMPRESSING AIR OR GAS SUPPLIES USED FOR FURNACE HEATING, METAL MELTING, BRAZING, SOLDERING BITS, LAUNDRY IRONS, ETC.

DIRECT COUPLED COMPRESSORS (see illustration right) are fitted with automatic internal by-pass valves and lubrication systems. They are direct coupled to Keith Blackman motors. Type OA compressors in this range occupy a floor space of only 18" x 7½".
CAPACITY RANGE: 100 to 750 cub. ft. of gas or air per hour at 3 lbs. per sq. in. pressure.

TYPE 4 COMPRESSORS (not illustrated) are also fitted with automatic internal by-pass valves and lubricators. The complete unit includes motor and drive on a common bedplate, all of Keith Blackman manufacture.
CAPACITY RANGE: 500 to 20,000 cub. ft. of gas or air per hour at 3-5 lbs. per sq. in. pressure.
AREA OCCUPIED: from 9¼" x 16½" to 61" x 27".

DID YOU KNOW?

KEITH BLACKMAN have been making compression joints for many years and the present design embodies features developed as a result of this long experience. Notice that the shape of the ferrule is such that the joint is made without unduly stressing the tube.



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serving to burn

Note: the four burner heads (right) are for high pressure gas, or low pressure gas and air blast.

LEFT: "Fishtail" type burner with two-armed stamped pattern injector for heating liquid in tanks by submerged combustion tubes. For use with low pressure gas supplies.
Size Range: 1", 1¼", 1½", 2" and 2½" outlets.
Capacity Range: 45-280 cub. ft. of gas per hour.

Brass non-blow-off head types: deal with 5 to 10 cub. ft. of gas per hour.

Stainless steel, "F" type head, burner: deals with 8 cub. ft. of gas per hour.

Perforated head type burner: deals with 10 to 15 cub. ft. of gas per hour.

INDUSTRIAL GAS EQUIPMENT

524

SILLIMANITE
BAUXITE

AND OTHER HIGH ALUMINA PRODUCTS

INSULATING FIREBRICKS

THREE GRADES FOR USE ON EITHER HOT FACE OR BACKING

WILLIAMSON, CLIFF LTD.
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Almost.

But let's face facts. A healthy gas industry needs more than an industrial load. It also needs an *expanding* domestic load—and that means appliances that not only build such a load but which unquestionably give the consumer good value for his money.

Can you think of any appliance which satisfies this dual requirement better than the Ascot instantaneous gas water heater? The consumption potential is vast, the economics unimpeachable.

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